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ABSTRACT

Discussions of education and the requirements of educational facilities are recorded in the minutes of these meetings. Highlights of the session are--(1) a discussion of demographic factors in schoolhouse construction, (2) creativity and school design, (3) performance and educational specifications, (4) total energy systems, (5) research in school planning, (6) vocational and technical curriculum needs for high school and junior college building implications, (7) school construction systems, (8) reports of the executive session, standing committees, and liaison committee, and (9) the executive committee meeting minutes. (TC)

ED036997

NATIONAL COUNCIL ON SCHOOLHOUSE CONSTRUCTION

PROCEEDINGS OF THE FORTY-SECOND ANNUAL MEETING

Lincoln, Nebraska

October 4-7, 1965

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NATIONAL COUNCIL ON SCHOOLHOUSE CONSTRUCTION
PROCEEDINGS, 1965

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TABLE OF CONTENTS

KEYNOTE ADDRESS

"Some Demographic Factors in Schoolhouse Construction"
Walter K. Beggs 1

CREATIVE IDEAS

Richard F. Tonigan 11

SECTION PRESENTATIONS

"Performance and Educational Specifications"
Lloyd Waite 25

"Can the Computer Design a School Building?"
Charles Roberts 32

"Total Energy Systems"
Basil L. Hick 37

"Adaptable Scheduling and Building Design"
James M. Thrasher 42

RESEARCH IN SCHOOL PLANNING

"Research Stimulation Seminars"
Arthur E. Wohlers 47

"A Comprehensive Study of Hourly and Daily Sewage Flow Rates in Florida Public Schools"
Milton E. Reeder 49

"A Study of the Factors Involved in Establishing Guidelines for Planning School Plants"
Nile O. McCrary 54

"The Educational and Experiential Backgrounds and Present Positions of School Plant Specialists"
Thelbert L. Drake 59

VOCATIONAL AND TECHNICAL CURRICULUM NEEDS FOR HIGH SCHOOL AND JUNIOR COLLEGE—BUILDING IMPLICATIONS

Donald D. Dauwalder and Gordon F. Smith 63

EAST ORANGE EDUCATIONAL PLAZA

Robert H. Seitzer 69

SCHOOL CONSTRUCTION SYSTEMS DEVELOPMENT PROJECT—A PROGRESS REPORT

John R. Boice ... 75

SCHOOL OF THE YEAR AWARD ... 85

FIRST ANNUAL ARCHITECTURAL EXHIBIT ... 85

EXECUTIVE SESSION—BUSINESS MEETING

Minutes of Annual Meeting ... 93
Annual Report of the Secretary-Treasurer ... 94
Annual Financial Report ... 96
Report of the Auditing Committee ... 99
Revised Policy Guide — School Fallout Shelters ... 100

STANDING COMMITTEES

Publications ... 107
Professional Activities ... 109
Research ... 111
Resolutions ... 113
School of the Month ... 115

LIAISON

American Institute of Architects ... 121
American Standards Association ... 122
Association of School Business Officials of the U.S. and Canada ... 122
American Society of Heating, Refrigeration and Air Conditioning Engineers ... 123
Illuminating Engineering Society ... 124

EXECUTIVE COMMITTEE—BOARD OF DIRECTORS: MINUTES OF MEETINGS ... 127

APPENDICES

Articles of Incorporation ... 155
Bylaws ... 159
Travel and Subsistence Rules ... 163
Members ... 165
Research Bibliography ... 180
Annual Meetings ... 187

NEBRASKA CENTER FOR CONTINUING EDUCATION

PROGRAM 1965

MONDAY, OCTOBER 4TH

7:00 P.M. FIRST GENERAL SESSION

Opening of the conference—Francis C. Darby, President, N.C.S.C.

Presiding—Merle A. Stoneman, Board of Directors, Past President, N.C.S.C.

"Welcome to Nebraska"—Floyd A. Miller, Commissioner of Education, State Department of Education, Lincoln

"Some Demographic Factors in Schoolhouse Construction"—Dean W. K. Beggs, Teachers College, University of Nebraska

TUESDAY, OCTOBER 5TH

9:00 A.M. SECOND GENERAL SESSION

"Creative Ideas"—Richard F. Tonigan, Board of Directors, N.C.S.C.

Group Sessions—Shared Summaries

1:30 P.M. THIRD GENERAL SESSION

Presiding—Francis C. Darby, President, N.C.S.C.
Publications Committee—C. W. McGuffey
Professional Activities Committee—M. Ted Dixon
Research Committee—Wallace H. Strevell
Secretary-Treasurer—Floyd G. Parker
Auditing Committee—Harold Boles
Resolutions Committee—G. W. Reida
Nominating Committee—James C. Schooler
Election of Officers

3:15 P.M. The Future of the Council
Board of Directors Report and Recommendations
Incorporation of N.C.S.C.
Changes in Bylaws
Other Business

6:00 P.M. Reception for New Members

WEDNESDAY, OCTOBER 6TH

9:00 A.M. FOURTH GENERAL SESSION

Presiding—A. L. Beck, President-Elect, N.C.S.C.

"Performance and Educational Specifications"—Lloyd Waite, Director of School Plant, Shreveport, Louisiana

"Influence of Computers on School Building Design"—Charles T. Roberts, Program Specialist, Department of Health, Education and Welfare, Washington D.C., U. S. Office of Education

"Total Energy System"—Basil L. Hick, Educational Facilities Planning, State Department of Education, Albany, New York

"Flexible Scheduling and School Design"—James M. Thrasher, Dean, School of Education, Montana State University, Missoula, Montana

11:00 A.M. School Visitations—Arrangements Committee

Group I—Bellevue Public Schools, Bellevue, Nebraska

Group II—Lincoln Millard Leffler Junior High School and Clare McPhee Elementary School in Lincoln

THURSDAY, OCTOBER 7TH

9:00 A.M. FIFTH GENERAL SESSION

Presiding—Frank E. Irwin, Board of Directors, N.C.S.C.

Research Committee Report—Wallace A. Strevell, Chairman, College of Education, University of Houston; and Arthur E. Wohlers, Bureau of Educational Research and Service, The Ohio State University

Symposium: "Significant Research in School Planning and Building"—Wallace A. Strevell, Moderator

12:00 Luncheon Meeting

Presiding—David W. Hutcheson, Director of School Plant Services, State Department of Education, Lincoln

Progress Report: "School Construction Systems Development Project—Educational Facilities Laboratories, Inc."—John R. Boice, Project Director

2:00 P.M. SIXTH GENERAL SESSION

Presiding—Cleve O. Westby, Board of Directors, N.C.S.C.

"Vocational and Technical Curriculum Needs for High School and Junior College—Building Implications"—Donald D. Dauwalder, Consultant to Industry and Education, Pittsburgh, Pennsylvania, and Gordon F. Smith, Director of Planning and Research, Los Rios Junior College District, Sacramento, California

"East Orange Educational Plaza"—Robert H. Seitzer, Superintendent, East Orange Public Schools, East Orange, New Jersey

7:00 P.M. Annual Banquet

Presiding—Francis C. Darby, President, N.C.S.C.

Dinner Music by University of Nebraska Department of Music
"School of the Year"—Aaron Cohodes, Editor, *The Nation's Schools*
Introduction of New Officers

ACTIVITIES FOR THE LADIES

MONDAY, OCTOBER 4TH

1:00- 4:00 P.M.	Registration for luncheon and trips

TUESDAY, OCTOBER 5TH

9:30 A.M.	Coffee Hour—Grand Island Room
10:30 A.M.	Foreign Fashion and Custom—Grand Island Room
12:00 Noon	Ladies' Luncheon
1:30 P.M.	Bus transportation to City Campus
2:00 P.M.	Tour and program at Sheldon Art Gallery
5:00 P.M.	Reception

WEDNESDAY, OCTOBER 6TH

9:30 A.M.	Tour of Boys Town and Visit to Cross Roads Shopping Center in Omaha

THURSDAY, OCTOBER 7TH

9:30 A.M.	Coffee Hour
10:30-12:30 A.M.	Tour of the Governor's Mansion and the State Capitol
6:30 P.M.	Annual N.C.S.C. Banquet

KEYNOTE ADDRESS

SOME DEMOGRAPHIC FACTORS IN SCHOOLHOUSE CONSTRUCTION

WALTER K. BEGGS

Dean, Teachers College
University of Nebraska

SOME DEMOGRAPHIC FACTORS IN SCHOOLHOUSE CONSTRUCTION

WALTER K. BEGGS

This title is not correct. What this should have said is "Some Demographic Factors That Must Be Taken into Consideration in the Process of Planning a 25-50 Year Period of Schoolhouse Construction," because there are many such factors that must be taken into consideration. These factors impinge upon what is done, have an impact on what is done, and will try us sorely before we get through.

Now I do not wish to take a tremendous amount of your time here tonight, but I would like to point out different factors that influence schoolhouse construction. One is the sheer weight of the growing population in the United States and the magnitude of schoolhouse construction that comes in the wake of this growing population. This is nothing new to you; in this day and age you cannot be in educational work and not be aware of the growing population. This hit us between the eyes after World War II.

DEMOGRAPHIC FORCES AND THEIR EFFECTS

I recall the Kansas State Teacher's Association Convention in Topeka in 1932 when one of the speakers addressed himself to the demographic factors of the present and future. He predicted that in 1960, just five years ago, the population of the United States would have reached a leveling off point. That is, there would probably be a hundred and fifty million people in the country, deaths would balance births, and the median age of the American population would spiral upwards. As a matter of fact, he thought that by 1970 the median age of the people of the U. S. would be about 50 years. He actually predicted, back in 1932, that toy manufacturers would go out of business and would have to reconvert their factories to making wheelchairs and crutches for the old folks who would inhabit the land in the year 1970. With the information on hand at that time, and what it looked like to him, this was a fair picture; but he could not have been more wrong had he deliberately tried. Now I may be as far wrong tonight as he was a generation ago, but I do know that we have more than 190 million people now, and the estimate for the turn of the century, just 35 years from now, is between 350 and 400 million. Add to this the fact that we are starting to school earlier—some of you, I am sure, had Head Start Programs this year—we are going to school longer, a bigger percentage of school age youngsters and adults are going to school, and if they do not want to go to school we force them.

When you take obsolescence into consideration and add to it the growing population, it appears very conservative to say that in the United States sheer gross building needs in the next 25 to 35 years are going to amount to roughly 150% of the current plans. Now in 35 years that is quite an undertaking. In other words, when we replace what needs to be replaced, when we add new plants to what is needed for the growing population and the expanding, both horizontally and vertically, of the school population, we will have to rebuild our school plant again and then half again. This would not be so extremely difficult if all we had to do was to plan additional buildings and build them, but we have to take into consideration the nature of this population, what it is going to do, and how it is going to distribute itself in the next 35 years.

We are told, and I concur, that by the turn of the century our 350 or 400 million people will live in thirteen tremendous population conglomerations, or as someone has tagged them strip cities or linear cities. Last spring I flew from Boston to Washington, and we flew right down tide water all the way. It was a nice, clear afternoon, and I can subscribe to the view, as a result of that flight, that there is very little open country between Boston and the nation's capitol. If you want to believe the demographic experts, start at Bangor, Maine in the north and go to Richmond, Virginia in the south, and this area by the turn of the century will be a strip city. This will cover approximately a thousand miles in length and will contain over 90 million human beings, or roughly the population of the U. S. in 1910. Now go to the other end of the country, start at Seattle, Washington, go south to San Diego, California, and you will have another strip city of something like 75 million people. If you want to come closer to Nebraska, start at Sioux Falls, South Dakota in the north, go south down the Missouri River right through the hubland of this country to Kansas City, Missouri, and then think in terms of from 20 to 25 million people.

We are told that 90 per cent of our school population will live in or adjacent to one of these strip cities, but I doubt if anyone has ferreted out and faced with real clarity the social problems that are involved here. We are beginning to see them, but some of the problems are going to be quite different from anything that we have ever dreamed of or ever imagined we would have to face.

Nobody knows just how we are going to provide the utilities for our large cities. My friends in New York City tell me that if there is another year of drought they will have a serious problem. Obviously in our coastal regions where these great conglomerations are beginning to build up, we are going to have to learn to economically desalinize ocean water. I do not know how long it is going to take, nor how expensive it is going to be, but this is probably the only way that the great strips on the eastern and western seaboards of the U. S. are going to be able to stay in business. So far we are not facing a water problem in Nebraska, especially this year as we are breaking all-time precipitation records in this area. We not only have a lot of water coming from upstairs, we also have a good deal in the basement. I guess we live right over the largest pool of underground water on the face of the earth. Over three million acres of land are under irrigation in this state. Thus, regarding the water supply in this particular area, we are favored at present.

As new forces are generated because of the demographic factors that are involved in the national distribution of our population, we could get some very interesting changes in the population movements that would have definite implications. We have no idea which direction the population movement will take, so we may have to think in terms of indigenous building modules which can be picked up and moved. If the population takes a sudden turn, and we get enough vibration from the strip city centers and some of the rural areas begin to grow, and grow rapidly, then we may have some different kinds of problems. Rest assured that the mobility of this population and the sheer magnitude of it is going to cause you some headaches in schoolhouse construction that you have not even dreamed of yet.

THE SHIFTING EDUCATION NEEDS

I would also like to point out some of the other factors we need to think about. One of them is the shifting pattern of educational needs. I mentioned that I was a superintendent of schools in Kansas during the drought and the depression era. At that time the major stress on our educational system was to provide some kind of economic and social security for the school population. We had the hideous spectacle of something like four million teenagers just roving here, there, and everywhere. You could go to any railroad, watch any freight train that went by, and you could count anywhere from ten to a hundred young people just travelling the railroads around the country. They had no place to light, no work to do, and it looked as though their society had rejected them completely.

Now we have that same thing again. We take a little better care of them, but we have a thing in our culture that is called "cybernation" which comes from a Greek stem meaning steersmen. That is about as far as the parallel can be drawn. Actually what cybernation is in our society is the marriage of the automated machine and the electronic computer. To focus this on demographic consideration, it means that this is reducing the work opportunity first of all for the unskilled, then for the semi-skilled, and then for some of the lower echelons of actual mental work that we have called the great white collar population of this country. As this happens, and as we have the "flotsam and jetsam" of the cybernetics world hit our school systems, then we are going to have to translate our needs differently.

We cannot put all of our effort into a drive for the building of a ten per cent section of the population toward a tremendous excellence because we have to take care of the youngster who has no opportunity, as our society is now constituted to look forward to any kind of worthy work activity. Our educational system is going to be called upon to tool first, then retool. We have certainly not heard the last of the vocational drive in this country.

The schools are going to be asked to readjust their programs to take care of all kinds of work, leisure, education, and intellectual needs. These kinds of responsibility are going to create some tremendous problems. Probably in our thinking in the future, as we build educational plants for these young people and for the adults, we are going to have to think in terms of what function the school plant is going to be used for. Now I do not believe that we are ever going to be able to drop the idea of the comprehensive school system. We are going to try to develop the intellectual component of our population. We are going to attempt to develop the skill component. We are going to try to take care of needs of the underprivileged, and so on. However, as we become more and more precise in the things we do, society is going to request us to build an educational program for a specific purpose for some component of the population. Maybe we will want specific kinds of programs under one roof; maybe we will want to provide separate buildings. I have the feeling that we will spread these buildings around over the population centers much more than we do now, and we will find classrooms in some interesting places. At Michigan State, classrooms are being built into the dormitories, and educational programs are piped via TV into those classrooms. They are attempting to get indigenous education programs for homogeneity in the dormitories. We may find more and more of this in education as we go along.

Let's look at another factor that will, I think, stretch our imaginations to the limit. We sat in our homes three or four weeks ago and watched the greatest spectacular of all times as we saw two astronauts shot into orbit where they stayed for eight days. The shot before we saw the astronauts take what was called a walk in space. I understand that in a future shot one of the astronauts is going to stay outside the capsule all the way round the globe, and thereby set a record that ought to stand for some time. I think somebody within the next decade is going to land on the moon. Within the next 25 years, this may be repeated on Mars.

I do not know what they are going to find there, but this is not the significant factor. What is significant is the fantastic research that goes into these space spectaculars. The plowing of this research back into the educational program, first to our colleges, then to our high schools, and eventually down to the elementary schools is going to impinge on the job that you are to do in the next quarter of a century or fifty years. As this information becomes more voluminous, obviously somebody is going to have to capsulize all of this new knowledge. They are going to have to get it into the libraries, and the kids are going to have to have access to it. I do not think that we can put enough books into the libraries which then means you are going to have to design a new type of library. Now you let your imaginations take you from there, and I think you will get the feel of what we are walking into as we think in terms of educational programs and, particularly here, educational plants. I could go on with illustration after illustration after illustration.

SOME CONSIDERATIONS BROUGHT ABOUT BY TECHNOLOGICAL ADVANCES

There is one more point I do want to make, and that is the growing technology that is beginning to surround the educational world. I wish that I could say to you that the faculty of Teachers College at the University of Nebraska and particularly its Dean had even a reasonable concept of where this technology is going to take us, but right now we are spinning our wheels. We do not know how to get it projected into the schools, and I think we are going to flounder for quite awhile. We are toying around with educational television, and not very many people are thinking about the receiving end. If we are to go to television, if we are going to use it, and if it turns out to be the educational tool some people think it will be, then how do we construct our schoolhouse? How do we train our faculties? How do we make use of this thing? Are we going to beam lessons, such as we are doing now, in the traditional subject matters or are we going to use it as an adjunct to the regular school program?

When there are three Telstars up in space in set positions, we will be able to bounce a television signal from anywhere on the face of the earth to any other point on the face of the earth. If this is true, then we can take our youngsters to any point on the earth where we can get a television camera. Again your imaginations can roam over the possibilities of this.

We are getting other very, very sophisticated types of technology. Perhaps you have seen the telerite, it is a little sylist that you write on which looks like a sheet of cellophane. If you can hook this to a telephone and have the proper receiving equipment on the other end, a man can sit in Washington D.C. and lecture to a class at the University of Nebraska in Lincoln, illustrating as he goes along. This will be flashed on a screen on the other end. In short, you could dial any resource that you want on the face of the earth within reach of a telephone, or by some other ingenious projection devices that are now being built, and bring it into any classroom. When all of this is assessed and when all of it is shaken down and built into the educational program, you who are involved in schoolhouse construction are going to have to think in terms of the kinds of the school plant it takes to incorporate such developments.

SUMMARY

Before we come to two or three general statements of just what we think it means, let us summarize for a minute.

The sheer grossness of the problem is staggering. When you add the mobility and the changing patterns of mobility, the needs of the population to that gross square footage needed, and then throw all of the growing technology of education into it, I think you will see that it is going to stretch the creative and innovative imagination of our schoolhouse planning to the very limits.

I know you are concerned, and may I say, ladies and gentlemen, that I think one of the finest jobs in all American education has been done in public school building. It has kept apace much more than has curriculum, and it has kept apace much more than teacher education, but it has yet a long, long way to go. You have begun to build flexibility into the program, but I do not think that you have even begun to probe the necessity much less the possibility of flexibility in schoolhouses. We have to forget the idea that you build a schoolhouse for perpetuity. The whole thing may have to be moved, and certainly it will have to be redesigned again and again. Instead of building obsolescence into the schoolhouse, tremendous flexibility will have to be built in. I am sure that we have to think in terms of mobility because we have to follow the movements of the population with the school plants. Whether this means building a new school plant be taken into consideration. I mentioned a moment ago that we may have or whether it means moving one, or a combination of both, will have to to think in terms of indigenous modules which are self-contained, but which can be put together in various styles and fashions to build a complete school plant. You must start with the function that the schoolhouse has to serve, keeping a weather eye on what is going on in the country and taking everything into consideration. We have to train a brand new breed of educator who is concerned about types of educational programs and who can turn the problem over to you, who are experts in the field, to build a plant accordingly.

I know what I have said tonight, ladies and gentlemen, is cold comfort to you, if any at all, because it is a pesky problem and a frustrating one. But what a tremendous challenge faces us. Dr. Miller pointed out to you a moment ago that the federal government is in the business up to its ears, and I think this is only the beginning. I agree with Dr. Miller that we certainly do not want a national system of education and a national Minister of Education to tell us what to do. In fact, I cannot think of anything that would be more damaging and deadly to schoolhouse construction than for the whole thing to come out of Washington. As good as the people are in Washington, much of this has to be left to the region, the state, and the locality.

We must think in terms of our educational system now. Our whole educational program is and will accelerate as an instrument of national policy. We are a looking glass into which the rest of the world views, and what we will be doing will be reflected all over the world. It is a showcase that will not be comfortable, nor will it be easy to live in, but it will be a fascinating experience. I wish you God speed in the next three or four days, and I wish you continued success as you plan for the future. I should like to say that I am putting my bets on you as a group of people who know your business and who will take the demographic as well as all other critical factors into consideration as you go about the work that has been assigned to you and as you plan the schoolhouses of the future for this nation.

CREATIVE IDEAS

RICHARD F. TONIGAN
Plant Manager
Teachers College
Columbia University

CREATIVE IDEAS

RICHARD F. TONIGAN

Mr. Tonigan, Chairman of the Second General Session, has presented here a statement of the purposes of this session and a summary of key points resulting from the discussions.

OPENING COMMENTS:

The purpose of this meeting is to provide the total membership of the Council with an organized opportunity to identify and exchange information on creative ideas being used in school plant planning in America. If the results of the session are sufficiently rewarding, they will be transmitted to all members in an early NCSC Newsletter. It is also envisioned that the results of this morning's deliberations may provide the NCSC Publications Committee with background material of comparable interest to NCSC's earlier publication "13 Principles of Economy."

The procedure for working this morning is simple. Following this orientation session we will break up into 13 discussion groups, each to discuss creative ideas focused on a different plant planning theme. A chairman and recorder have been appointed for each committee, and comfortable meeting rooms have been provided. Each member may select from this list of topics the group he wishes to join. After an hour and a half of discussion, everyone will return to the auditorium where committee chairmen will be requested to repeat to the assembled members and guests the principle creative ideas identified in their respective group discussions.

This meeting is the opportunity provided for each of us to find out what others are doing in a particular field of prime interest. Let me remind the membership that it is not only an opportunity, but also a duty, for us to use this in-service educational opportunity to help fellow members learn about ideas they ought to know if they wish to improve themselves as school building planners.

Naturally these group meetings will provide opportunity for new members to become better acquainted with other members of the Council, and for a growth in fellowship to take place among our membership.

In closing these introductory remarks, let me be so presumptuous as to remind you that all members engaged in group discussion share a responsibility to be good listeners, to participate in presenting ideas and to seek out the knowledge and reaction of the entire group.

Following these remarks by the chairman, members departed from the auditorium to reconvene in committee rooms where they would discuss ideas in the following topic areas:

Administering Plant Planning Programs
College Lecture Rooms
Educational Building Clusters
Elementary Classrooms
Elementary School Grounds
Equipment and Furniture
Mechanical Systems
Occupying and Trial Run of New Facilities
Rehabilitation
Space Analysis and Assignment
Specialized College Rooms
Specialized Elementary School Rooms
Specialized Secondary Rooms

Following the discussion sessions the members and guests returned to the auditorium to hear the chairmen of the discussion groups summarize the results of their deliberation. A synopsis of each recording secretaries' report is included below:

SYNOPSIS OF CREATIVE IDEAS DELIBERATIONS

Whether or not these ideas will appear creative to the reader will, in essence, depend on the extent of his current knowledge. It is, of course, hoped that every reader will find at least one venturesome idea or white gem among this list. Ultimately each of you realize that what we do is seldom new or creative, but instead represents at the most a modification, a hoped for improvement, over past practice or thinking.

ADMINISTERING PLANT PLANNING PROGRAMS

1. Since so many schools and colleges are building new facilities and since voluminous efforts are being exerted in the building boom to develop educational specifications which can be used to guide the architectural community in the design of each educational building, it would be highly desirable to have a central resource center which would collect copies of all educational specification documents and make them publically available for other planners to research for ideas and developments. The dissemination and diffusion of interesting differences in the construction and utilization of the documents would also prove most helpful to the local, regional, and national school planners and designers.

2. Consider utilizing standing committees of principals to be responsible for continuous review of educational requirements which should have effect on current plant planning and plant management programs.

3. Utilize continuing education, adult education, extension education, etc., programs to develop school and college building service workers training programs which will provide more adequately trained workers to operate and maintain educational facilities. A great deal of money is being wasted by inefficient help, but more important, educational opportunity for the children of America is often being impaired by the use of inadequately trained custodial and other building service workers. One must realize that the educational plants being provided in this generation are in the main vastly more complex and technical to handle and also that the educational process itself requires a vast array of new building services if it is capitalized on newly developing opportunities. It is possible to utilize federal funds for manpower and vocational training in these proposed building service training programs.

COLLEGE LECTURE ROOMS

1. If college lecture rooms are to become successful learning rooms, it is essential that they be designed and operated instructionally on a multimedia basis. Provisions need not be identical in every lecture room, but a wide variety of teaching tools should be available in each facility. Based on the needs of individual colleges some should be large, some small and some in-between in size. Deliberate attempts should then be made to incorporate the latest successful developments in audio and visual production which are conducive to the lecture method. Opportunity for students to easily make inquiries is essential as is frequent personal contact verbally and visually between individual learners and the teacher. Since one method of obtaining this close interaction is by frequent division of larger lecture groups into sub-division discussion and study groups, some of the lecture rooms might very well be part of a larger complex which provides suitable facilities for small group activities.

2. Educators should necessarily assume that growth of the nation's population does not absolutely dictate bigger buildings, bigger classes, etc., but that it is educationally possible that the growth taking place may dictate the reverse type of facilities, that is, smaller instructional centers.

EDUCATIONAL BUILDING CLUSTERS

1. The conceptual form of educational clusters varies:
   The Educational Park (East Orange, N.J.)
   The Educational Village (Ft. Lauderdale, Florida, where classes contain kindergarten through junior college)
   The Cluster of Subject Matter Buildings
   The Cluster of Resource Centers (e.g. libraries, meeting centers, museums, planetariums)

The Center for Specialized Educational Facilities (Cleveland, Ohio)
The Clustering of Parochial and Public Schools for Joint Use of Facilities
The Clustering which results from Community Planning (e.g. cultural, social, and recreational service centers)
The Rural Comprehensive, Consolidated Schools
The Effect of Federal Programs on Clustering (Maybe NYC)

2. Invoking the clustering concept requires a tremendous amount of cooperative involvement by educators and other community planners. Because of this the group recommended that the next annual meeting of NCSC have the theme, "Coordinated School-Community Planning." Because of the nation's massive assault on the highway and metropolitan areas problems, it would be timely to discuss such topics as urban renewal and the schools; highways and the schools; socio-economic political issues affecting school plant planners actions.

ELEMENTARY SCHOOL CLASSROOMS

1. Increased attention is being given to solving all of the environmental problems present in typical classroom. Visual, thermal, sonic spatial, and athletic needs are being more thoroughly analyzed and better solutions are being derived for the significant advantage of learning.
2. Many interesting attempts are being made to provide elementary classroom space suitable to a much wider variety of teaching methods. Classroom units jointed with movable walls, and at times without any interior separating walls, are being built throughout the U. S. and Canada. Program requirements demand such experiments be tried with careful attention given to environmental factors involved. The educational results achieved will of course have to be evaluated by the users.

EQUIPMENT AND FURNITURE

1. Recent development of a new combination telephone and radio device now makes it possible to reach key maintenance or operational personnel who may, and should be, away from their desks. The device is about the size of an attache case and into which a standard telephone is placed with the receiver located on a special pedestal. When the phone rings, a signal is transmitted to a small receiver carried by the person to be reached. When the unit is activated it becomes possible to carry on the phone conversation at a range of ½ mile from the home base. At the completion of the conversation the phone is reactivated and ready to receive future calls. This unit is extremely useful when having to contact key personnel within a building; it is also useful on construction projects where a person may be inspecting facilities

at some distance from the field office phone. Other uses are limited only by the users imagination and the present one-half mile range (Soon to be increased to one mile according to the manufacturer).

2. *Library Carrels*—The presently available carrels on the market are for the most part tables with sides, unadaptable for other uses, and often overpriced. A recent development of carrels for a library incorporate the use of standard bookcase units forming the side wall of the carrels. A horizontal work surface with a vertical visual divider is then locked between two bookcase units thereby forming a completely flexible carrel. Special slip lock units are built into the backs of the bookcase and no tools are required to assemble these units. The units offer complete flexibility insofar as they can be disassembled in minutes and the horizontal work surfaces have devices to which legs can be attached thereby forming a table unit for use in other areas. The units are also designed to receive power supplies for TV, tape units, projectors, etc. A distinguishing feature is the great economy in use of floor space which is made possible by combining the function of book stacks and carrels into a single flexible unit.

3. *Lighting Fixtures*—A new measure of versatility is now made possible in classroom lighting through the use of powered raceways which can receive lighting fixtures at any four foot module. This innovation allows lighting patterns to be in continuous rows, staggered patterns, and from one unit to twenty or more in a room, depending upon requirements. In addition these units make maintenance easier and safer—since the complete fixture can be unplugged, replaced with a spare, and the faulty fixture can be repaired on the work bench rather than trying to do the job from a ladder.

4. *Laboratory Gas & Water Turrets*—Heretofore these units were only available with two gas and one water outlet thereby making it impossible to service two student stations with one turret fixture. Individual fixtures caused costly plumbing work with a greater number of maintenance problems. A recent innovation has been the manufacture of a combination double unit turret which now includes 2 gas and 2 water outlets. This has reduced the number of connections and units as well as conserving work space at the tables.

5. *Portable Lab Science Tables*—These units are reaching a point of sophistication in development which makes their use increasingly desirable. Originally designed for the elementary and middle school programs, the units are now finding use in standard classrooms which have to serve as temporary science facilities.

6. *Antennae Loop Systems*—The remarkable development of a tape-like antennae loop used with transistorized receivers has opened a whole new concept of audio communications. Designed primarily as flexible language labs, these units are now finding such uses as for hard of

hearing pupils. This concept of use now enables these handicapped students to move freely about classrooms and still receive perfect sound pickup without being "plugged into" a fixed station as was previously required. Use of these loops in various areas of a building can open many new avenues to improved audio tape techniques.

7. *Home Economics Stations for the Handicapped*—Cleveland's school system is presently designing special home economics units intended primarily to accommodate handicapped wheelchair cases. This is an interesting development which bears watching insofar as it may be good practice to install some stations of this type in a home economics facility for a variety of handicapped youngsters. Certainly home and family living is as important in the growth pattern of handicapped children as it is in the lives of more normal pupils.

MECHANICAL SYSTEMS

1. Total energy systems are being utilized at an increasing rate.
2. Greater effort is being exercised both efficiently and effectively in integrating the designs and outputs on all of the mechanical systems found in educational buildings.
3. The use of thermo-electric systems and nuclear power will increase.

THE OCCUPANCY AND TRIAL RUN OF NEW EDUCATIONAL FACILITIES

1. The importance of this phase of school plant planning and construction is hardly ever reorganized until several years after occupancy, when it is too late.
2. Occupancy should be scheduled for not less than one month after building completion in order that time be provided to equip, to trial run motors, and to balance many complicated mechanical systems. Earlier occupancy robs children of educational rights and cheats the public out of paid-for materials and services.
3. Both academic and non-academic uses of a new plant should have an intensive orientation to the "to be occupied facility" prior to occupation day. Administrative personnel, including building service supervisors and mechanics, should be thoroughly acquainted with the operation of the building through both the planning and the constructing phases. Such in-service is absolutely essential to the attainment of efficient educational and property management.
4. The educational specifications which controlled plant design should be widely circulated during the first months of occupancy to reemphasize the philosophy of management towards meeting the educational needs of the community within the budget allocated.

5. Construction specifications should require that maintenance, operation, parts, and service manuals be supplied to the new owner in multi-copy at least two months before occupancy. On site demonstration of all mechanical equipment in joint company with mechanical engineers and architects should be supplied by manufacturers and specified by owners in all planning and construction contracts in school systems where highly skilled mechanical engineers and mechanics are not employed.

6. A formal procedure should be enacted for evaluating all complaints and suggestions regarding the planning, design, construction and use of each new facility. Failure to do so will often undermine the best planning efforts and result in school systems getting far less than they paid for. The guarantee requirements should be fully and fairly utilized by every owner. Full knowledge that the administration will fully enforce guarantee requirements places pressure upon the contractor to improve his services throughout the entire period of his contract.

7. A fund should be provided to make minor adjustments and additions to the building as completed under the contract. It is only natural that one of the many new staff or faculty or student members will have physical requirements beyond these planned in the original structure. It is not possible to fully anticipate the use for every single shelf, holder, divider, or for every single piece of furniture or equipment.

REHABILITATION

1. The primary question that should be asked is whether the building, when up-dated, can house the required educational program. If the answer is "no," then the building should be replaced.

2. We should plan as carefully, in all areas, for modernization as we do for a new building. This means a complete educational and architectural specification. This means staff conferences and all the other steps normally associated with a building program.

3. If the building has good architectural features, they should be preserved. Often the building, with its impressive entrance or nostalgic bell tower, is a neighborhood symbol. If the building has nothing to recommend it from an appearance standpoint, the modernization program gives an excellent opportunity to consider an exterior facelifting.

4. In making additions, plan ahead. Can the addition be used to give a new front to the existing structure? Will the addition be in use years hence when the existing building may be replaced? Are other additions part of a future program? An honest appraisal with creative planning can eliminate the unfortunate mistake of an addition that causes more problems, both esthetically and educationally, than it solves.

5. Look for new places for additions. How about up, down, over, under, around? Perhaps it's possible to put a large auditorium or gymnasium underground and save the precious open space. One educator suggested it is a good idea to prospect for new space in the existing structures. Perhaps with a reallocation of existing space, problems can be solved.

SPACE ANALYSIS AND ASSIGNMENT

1. The principles of space analysis and assignment must fully respect the needs for program accommodation, program improvement, true economy of long term operation, uniform comparison of essential information needed by the educational administration, the public and Congress if they are to provide sound and adequate financing.
2. Space must be provided in a sensible manner and proportion to the immediate educational program needs, but it must also vitally allow for adaptation of facilities to tomorrow's educational program.
3. The use of the computor for analyzing and assigning educational programs and educational space is advancing rapidly (for example, Ohio State University, EFL-MIT Study, Purdue University, big city data processing service centers).
4. It is increasingly apparent that educational units need to plan financially now to have money continually available to be used as capital improvement adaptation funds. These monies will not only be spent to rehabilitate old buildings, but also to adapt relatively recently constructed facilities to rapidly changing curriculum demands.
5. Prospecting space is needed—some for multi-use attempts, some for teacher investigations. This space could result in facilities for learning use; certainly some space will be used by teachers to improve their own knowledge and skills.

SPECIALIZED COLLEGE ROOMS

1. Large lecture halls can be more heavily scheduled when they have adjacent instructor preparation rooms. These rooms can be further enhanced with moveable science cabinets and demonstration tables. Likewise chalk boards mounted on tracks which can be written on in the preparation room will be helpful. Some large lecture rooms can justify a two or three part revolving stage to facilitate instruction preparation.
2. Multiple use science areas provide instruction in as many as six different areas of science and are being tried in open loft-type plans.
3. Retrieval systems are highly sophisticated and developed for regional use. They are mostly in the thought stage, but are beginning to approach reality.

4. Multi-use swimming pools ("U" shaped for example) with variable depths permitting one filter and one chemical treating system to service the needs of 2 or 3 pools are being developed.

SPECIALIZED ELEMENTARY ROOMS

1. The concept of an elementary school library is undergoing considerable change. Some libraries are becoming very flexible units capable of sub-division in library teaching space, conference and discussion spaces, a variety of research spaces, and audio-visual rooms. A second approach includes the retention of centralized library control but provides wide out-of-the way library circulation of materials to learning groups. This extension of the library in instructional centers reduces, if not eliminates, class use of this central library. When the plan is successful, heavy individual use of the central library should be a subsequent result.

   A third change is the development of several decentralized or multi-purpose rooms, including some library facilities, in areas closely surrounded by a small number of academically related instructional rooms.
2. A considerably wider use of newly emerging audio-visual techniques and equipment was strongly recommended. The value of electronic in lieu of electrical equipment was emphasized as a means of gaining furniture movement flexibility.

SPECIALIZED SECONDARY ROOMS

1. The area of secondary school science curriculum improvement is increasingly calling for specialized laboratory work spaces for both individuals and small groups.
2. Changes in science programs are simultaneously calling for a large group demonstration discussion area containing a wide range of audio-visual facilities. These large group discussion areas may serve many uses for formal class work and for informal hobby-type student activity. If astronomy is to be a part of the curriculum this may be a good room for housing it also.
3. More multi-use rooms providing for such areas as physics, math, science, and language laboratories are required.
4. Individualized, independent instruction in study areas are increasingly being called for in the modern secondary schools.
5. The instructional materials center is expanding considerably beyond what used to be housed in secondary school libraries. It appears that they will continue to be part of the library facility but that they will emphasize multi-media and will be equipped to serve a much greater variety of instructional material requests in very limited time.
6. Computer centers are increasingly being made available to both secondary school programs and to the adult educational and vocational education programs which are often in the secondary schools.
7. Some schools are experimenting with the ungraded secondary classroom following the visible room concept of the elementary school.

SECTION PRESENTATIONS

PERFORMANCE AND EDUCATIONAL SPECIFICATIONS

LLOYD L. WAITE

Interrogators	J. H. CAMMON	ARNOLD TJOMSLAND
Recorder	GUY O. TOLLERUD	

INFLUENCE OF COMPUTERS ON SCHOOL BUILDING DESIGN

CHARLES ROBERTS

Interrogators	H. H. EDWARDS	JOHN KOCHRIAN	ELMER DALTON
Recorder	R. J. HULL		

TOTAL ENERGY SYSTEMS

BASIL L. HICK

Interrogators	WILLIAM MORTON	CHESTER BUMBARGER
Recorder	CHARLES CHICK	

ADAPTABLE SCHEDULING AND SCHOOL DESIGN

JAMES M. THRASHER

Interrogators	M. GENE COFFEY	HAROLD SILVERTHORN	EMMETT MOLL
Recorder	WILBERT VESTNYS		

PERFORMANCE AND EDUCATIONAL SPECIFICATIONS

LLOYD L. WAITE

At the outset it appears to be important to define the terms 'performance' and 'educational specifications.'

> EDUCATIONAL SPECIFICATIONS are a communicative device from school authorities to the design team of architects and engineers. At their best they (a) convey understanding without confusion, (b) are free from pedagogic jargon, and (c) set the problem without hampering the design team in terms of solution.[1] At their worst the opposite of these factors is too often true.
>
> PERFORMANCE might well be defined as 'the effective working capacity of any device' or 'that which performs the functions required.' In both of these definitions there is a strong suggestion that definitive measurement is possible and further that it is related to the requirements of the problem to be solved.

EDUCATIONAL SPECIFICATIONS

The writing of effective educational specifications is essentially a one-man job. It is true that through group discussions with teachers, administrators, maintenance personnel, and sometimes laymen, many useful ideas can be generated but it is equally true that this same approach can also generate confusion. The road to problem solving via the group approach is perilous at best and this is almost a truism when the group is dealing with many factors about which they have small knowledge or where much diversity of opinion exists.

The usual recitation of educational philosophy and objectives that form the back-drop to many educational specifications have only small value to the design team in planning a specific plant. Value accrues to those who write the statements but they mean little to the architects and engineers who will design the structure. It is true that the architect needs to sense the 'climate' the educational group envisions as appropriate to effective learning but perhaps this can be accomplished better through a series of semi-formal talks and a few well selected field trips.

A few years ago William Caudill, in writing about school plant planning, discussed the process in terms of three major groups of closely related factors: Economy, Education, and Environment. He used as an illustration these three factors as representing legs of a tripod and called attention to the need for having each leg approximately the same length if reasonable balance was to be achieved in the final product.[2]

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[1] McClurkin, W. D., *School Building Planning,* MacMillan Co., New York, 1964—p. 75.

Much that is produced in terms of educational specifications is written with almost complete disregard to the amount of money available for construction, equipment, and site. This may be an interesting academic exercise but little of real value emerges from this approach. In the initial planning phase due regard to the amount of money available is paramount. For example, it is an error on the part of the person writing the educational specifications to call for classrooms of 1,000 sq. ft. when the budget will only build 800 sq. ft. per room. It might be argued that this gives the architect a real challenge to achieve the desired goal and that he can and will conjure up a miracle. This is seldom the case. What happens all too often is a quality of construction that leaves much to be desired.

The quality level of construction is a function of the School Board at the policy level. These policies can well be set forth in a broad statement of 'Principles for Planning' which accompany each set of particular educational specifications. Here the School Board establishes the quality of construction desired and to some degree directs the design and specifications. Further, the School Board can require equitable balance among architectural, structural, mechanical, and electrical components through this procedure. It is an error to permit the architect to expend the majority of the building fund creating a monument and sacrifice the internal elements of the structure. If non-load bearing, masonry partitions are required, then 2" x 4" studs and sheet-rock are not acceptable; if a circulating hot water system is required for heating, then individual room type heaters are not permitted; and this list could be extended to cover dozens of items from 20-year bonded roofs to the sanitary disposal system. In establishing quality control the School Board also has the responsibility of matching its requirements with a corresponding budget. Again architects and engineers are not magicians and should not be required to do the impossible. From time to time these policies should undergo review in terms of new materials and construction systems. A document of this type should not be static but it is a most important device and especially so if a school system is building a number of plants each year and is committed to a long range program of capital improvements.

Assuming that the School Board has set the budget for a particular school and has an established set of quality control policies, the educational specification writer now needs to review in detail the requirements of the several approving agencies (Fire Marshal's Office, Board of Health, State Department of Education, Regional Accreditation Group, Planning Commission, etc.). In most all instances these agencies recite minimum requirements that in no way hamper effective educational or architectural planning. Some of the codes are somewhat out-dated and need to be changed but in such instances reasonable exceptions can be requested with good chance of approval. To write a set of educational specifications in major violation of these known requirements creates confusion. For example, if one of the requirements for accreditation of a high school is a library with a seating capacity of 1/10 of the student body and shelf space for 10 books per student, then a violation of this requirement in design can only create problems.

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[2] Caudill, William W.—*Toward Better School Design:* F. W. Dodge Corp., New York 1954; Chapters 2-3-4.

A useful device in the preparation of educational specifications is a skeleton outline. No brief is held for the following enumeration of topics to be covered other than it is a rather complete listing of the areas and services.

I. Local School Characteristics

   A. Attendance area to be served

      1. School location, size, summary of rooms
      2. Age and grade groups to be accommodated
      3. Scope of services to be provided
      4. Enrollments anticipated by age/grade

   B. Organization plans

      1. Subject offerings, required and elective
      2. Sectioning practices; course election patterns
      3. Zoning separation of groups
      4. Graduation requirements
      5. Tentative daily/weekly schedule

   C. Utilization plans

      1. Night—Adult—Summer uses
      2. Stipulations regarding gross structure
         a. Height, layout, materials, special features

II. Departmental Requirements

   A. Purposes, discernible trends, courses offered

   B. Number, age, grade level, sex of occupants by classes

   C. Activities in each area by class or subject
      1. Learner activities
      2. Teacher activities
      3. Traffic; internal movement; groupings

   D. Area or space requirements and layout
      1. For activities
      2. For furniture, equipment, supplies

3. Preferred location and arrangements
    - a. Orientation to other areas
    - b. Internal arrangement and work areas
    - c. Shared or multiple use capability

E. List of room furnishings needed
- 1. Quantities, dimensions, particular specifications

F. Special utilities and service facilities needed
- 1. Unique environmental features (heating, ventilating, lighting, humidity control, acoustical, color, electrical, plumbing, etc.)

G. Storage requirements
- 1. Items to be stored regularly and occasionally
- 2. Area locations, quantity and dimensions, space arrangement, design suggestions.

III. General Area Requirements (for each area—purposes, activities, occupants, location, equipment, space layout, utilities, storage, and special needs)

- A. Administration
- B. Assembly
- C. Food Service
- D. Gymasium
- E. Multipurpose combination areas
- F. Recreation and outdoor
- G. Resources center
- H. Stores and books

IV. Service System Stipulations

- A. Custodial and housekeeping
- B. Delivery
- C. Mechanical systems
- D. Parking service
- E. Sanitation
- F. Utilities.

V. Specific considerations for all

- A. Acoustical
- B. Bus loading
- C. Ceiling materials
- D. Clock system
- E. Cleaning systems
- F. Clothing storage
- G. Colors, signal code, etc.
- H. Display
- I. Exits

J. Fencing
K. Fire protection
L. Floor markings
M. Floor surfaces
N. Hardware
O. Intercom
P. Outdoor facilities, lighting, paving, etc.
Q. Plantings and landscaping
R. Plumbing
S. Program signals
T. Public conveniences
U. Safety
V. Security
W. Storage
X. Traffic
Y. Wall surfaces
Z. Zone controls[3]

The skeleton outline needs to have 'meat put on the bones' as to how the plant is to function in terms of learning activities as well as occupancy characteristics by both students and teachers. Here the policies and practices of a particular school system come into focus. For example, if the plant is to accommodate the 'team teaching' approach supplemented with television, then the directive to the design team should spell this out with as much detail as possible, not in terms of construction materials but rather in terms of performance as it is related to teaching and learning. This factor is related to every item covered in the specifications.

PERFORMANCE

The evaluation of a completed school plant can be divided roughly into two major categories: (1) the physical aspects and (2) the educational climate. These are not unrelated and at times they are difficult to separate.

Physical: Much of this portion of the evaluation is done prior to construction. If the specifications reflect the quality level established by the School Board, the space requirements are satisfied and the low bid is within the budget, at least a portion of the plant scores well in terms of performance. After the plant has been in use for a year or so, it is not too difficult to appraise the quality of finishes, equipment, environmental controls, student traffic patterns and the entire list of physical requirements set forth in the educational specifications.

Much more difficult is the task of evaluating the educational effectiveness of the plant. Quite often the personnel that helped formulate the desired educational climate do not staff the school and the group of administrators and teachers who work in the building have a sufficiently different frame of reference to the point where it is most difficult to ascertain whether the plan reflects the program or not.

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[3] McClurkin, W. D.—*School Building Planning,* MacMillan Co., N.Y., 1964—p. 78-79-80.

The time lag of about three years from the writing of the educational specifications to the date of placing the school in operation is one factor. In this length of time personnel changes take place and in some instances major policy modifications may have occurred. For example, an elementary school conceived primarily as a group of self-contained classrooms does not score very well when evaluated against the concept of a semi-departmentalized organization requiring a central library or instructional center and special areas for art and music.

Another factor that presents problems in performance evaluation deals with the rather crude devices presently available for measuring learning. When compared to the instrumentation used for ascertaining reflectance factors or solar heat gain, the devices for measuring learning leave much to be desired.

These two sets of factors plus a rather generalized apathy toward performance evaluation leaves something of a void in the field of school plant planning and construction. For purposes of discussion the following points are offered:

1. More effectively written educational specifications in terms of a truly communicative device. Here is an opportunity for the Council, in joint effort with the A.I.A., to produce a 'guide' that will be equal to the quality of the document relative to lighting. The efforts of Russell E. Wilson in 1956 and released in two parts under the general title 'School Plant Studies' by the A.I.A. was a good start. Since that time Frank Lopez, A.I.A., John Cameron of the U. S. Office of Education, and most recently Dr. Shirley Cooper of the A.A.S.A. have made contributions to the field of school planning; yet, there appears to be a need to pull together the best thinking possible and produce a 'guide.' That would help insure a truly communicative instrument of value to both educators and architects.
   To this end preliminary contact has been made with the Committee on School and College Architecture of the A.I.A. with some favorable response. It is not too much to hope that the National Council on Schoolhouse Construction through its Research and Publications Committee and its liaison person with the A.I.A., Dr. Cleve Westby, would explore this area to a significant conclusion.
2. A concerted effort on the part of those actively concerned with building school plants to engage in a long range series of 'critiques' at the local level involving the design team, school staff, and central administrative personnel, with the findings in summary form reported through the Council media.

3. Continued close liaison with the A.S.C.D. to the end that more effective measuring devices will be made available in terms of learning factors.

4. The encouragement of colleges and universities offering courses in the field of school plant planning to include some experiences in the area of educational specification preparation. To some extent this is now being done but in many cases the product is a 'pie in the sky' approach which results in confusion.'

The following twenty-two (22) persons indicated a willingness to work on such a project:

Luther T. Alexander
Morris R. Baker
Verne G. Chaney
Harold Culver
Richard W. DeRemer
D. L. Dunlop
C. Lyman Ellis, Jr.
Dwayne Gardner
John Goodwin
Frank C. Gunderloy
Hugh L. Jacobs
Marvin R. A. Johnson
Tolbert F. Lawyer
Arthur L. Matthews
Nile O. McCrary
D. G. W. McRae
L. Miles Sheffer
Earl J. Shobe
Harold Silverthorn
Jim Theodores
L. L. Waite
N. Wrightson

CAN THE COMPUTER DESIGN A SCHOOL BUILDING?

CHARLES ROBERTS

The computer can guide rockets, missiles and planes, and land planes successfully. It can print a daily paper; match male and female personalities for compatibility; predict presidential elections; control the airways of the world; read books; review literature; write letters; keep track of astronauts heart beat, blood pressure, blood count, temperature, respiratory rate, and general health conditions as they orbit the earth; and operate other complicated machines. At the Sloan-Kettering Institute for Cancer Research a computer is being set up to analyze the records produced by continuous monitoring of the heart. It may ultimately be able to read the incoming electrocardiogram more accurately than human eyes, compare this with its memory patterns, and instantly warn doctors of sudden or dangerous changes. With the computer's ability to analyze quantities of data, and monitoring's capacity to provide dynamic measurements of the body's functions, great progress in diagnostic accuracy may be expected. A "unified field theory" of medicine, tying together all physiological phenomena, may be just over the horizon.

The machine is taking over, but don't get too worried about these mechanical brains making man obsolete. Like all other great inventions—from the cigaret machine to TV—they still need someone standing by to kick them when they refuse to work. Someone has composed a little jingle:

Within the automatic home
The housewife lolls and lingers;
No longer plagued by dishpan hands;
Instead push button fingers.

Yes, automation is here. New factories are replacing old with fewer men and more machines. Companies which use large numbers of clerks are using machines to relieve them for other jobs. You recall how a computer is used to review your income tax return for discrepancies, omissions, and accuracy.

Now to the question for consideration today: Can computers design school building? No. The computer can do only those things which it is told to do. It cannot create. It is a logical machine, which understands only a few complicated languages. It will calculate, solve mathematical equations, read, write, store, and pull out of storage. But it cannot make choices. At the fork in the road, both roads will be traveled if they are open.

The computer operates and is controlled by an electrical current. When the switch is open the current stops; when it is closed the current passes through. It reads a binary language: open—shut; on—off; yes—no; or 1-0. If numbers are stored in the machine in positions 0040 to 0044 and other numbers are stored in positions 6238 to 6242 and it is given simple instructions—add what is in positions 0040-0044 to what is in positions 6238-6242—it will do that and nothing more; and it will perform this task in microseconds. It is understandable then that the computer will perform tasks more quickly and more reliable than the human machine, and by standardizing a set of instructions—programming—procedures may be speeded up tremendously.

How has the computer been used by planners and designers? Designers and planners for the automobile industry, boating industry, computer industry, aircraft manufacturers, road building industry, bridge construction industry, the building industry, and perhaps others have used the computer in various ways to their advantage.

Chrysler Corporation uses electronic computers to do a better and much faster job of preparing parts lists and making production releases for a new model year. The techniques not only save time and eliminate mounds of paper work; they also serve to spread the work load more uniformly so as to reduce the burden of paper work at the time the manufacturing organization is making ready for a changeover. The computer is used to produce parts lists complete with all data, including interchangeability among product groups. The computer also updates existing parts lists and revises the memory system in accordance with the flow of engineering changes. With this new system the time required to produce a complete set of parts lists, or to update existing material has been reduced from weeks to only 48 hours.

Fabricators are using the computer to produce detailed drawings of structural-steel framing members. The manner in which the final design is achieved is an important and interesting feature. The engineer prepares structural characteristics of the individual components—length, cuts, rivet holes, and connections—on a layout of floor framing system. On the layout, he locates columns, specifies nature of equipment to be supported and the loads to which the floor is subjected. From this input forms are prepared which are subsequently keypunched and fed into the machine. When instructed to calculate and draw according to some already prepared formulae, the computer and the attached plotter will determine the size of the members and will draw them in place.

Two programs, Critical Path Method (CPM) and Performance Evaluation Recording Technique (PERT), have been used by school boards in constructing school buildings. CPM is a device to break down all the steps in the design and construction of a school building and arranges them into a specific, logical order. It takes into consideration the interrelationships and coordination of all contractors and their subcontractors listing all the activities on a periodic progress report. The method highlights critical activities and detects trouble spots early, giving the school administrator the ability to react rapidly to changing conditions.

At the time CPM was being developed, PERT was being put together for the Navy by Booz, Allen, and Hamilton. It was developed to keep track of research and development work on the Polaris missile.

The difference between CPM and PERT are: the former is accurate in its cost-time function predictions while the latter (PERT) tries to predict probabilities for the estimates of job duration. There is no magic about these applications. All details and conditions about possibilities must be recorded and stored in the machine which calculates the results when certain other probabilities (programs) are fed in to interrelate with the former. In substance the machine predicts events under simulated circumstances.

The computer was employed to pare an estimated $3 million from the construction cost of a junior college in St. Louis County recently. In obtaining this economy, the same techniques employed by areospace engineers in simulating the performance of aircraft and space vehicles were applied to the planning of the new, 4,500-student college. The computers at McDonnell Automation Center, which have been used to simulate earth orbit and rendezvous of space vehicles, were employed to simulate the operation of the new college. The expected programs of each of the 4,500 students, the number and size of planned instructional spaces, available faculty, and various time patterns for class scheduling were fed into the computer. In less than 30 minutes the computer produced a complete college schedule that indicated what percentage of a 45-hour college week (8 a.m. - 5 p.m.; Monday - Friday) the college's instructional spaces—lecture halls, classrooms, shops, and laboratories—would be in use.

Twenty-seven different runs were made with different ratios of classroom sizes, the number of lecture halls, the number of faculty, etc. After 27 runs, they selected the best room and seat utilization and provided the architects with educational specifications for 85 spaces—several rooms and 100,000 square feet fewer than they thought possible. With building costs mounting to some $20 per square foot a savings of $2 million was realized on instructional space alone and by about $3 million when corridor and other auxiliary space was taken into account.

Stanford University has developed a scheduling manual, which outlines computer procedures for scheduling school facilities. The concept here is that the school day and year can be lengthened which better utilizes the facilities.

James A. Souder, of the Los Angeles firm of *Bolt Beranek and Newman, Inc.* showed architects how he used a computer to design a hospital. He stored some 40,000 data items consisting of nurses, patients, and doctors' travel time to and from operating rooms, coffee, supply room, and equipment room on a computer, which printed out an origin-destination Matrix.

Armed with this detailed information, he tested three schemes: a nursing unit tower with 100 beds per floor rising from a large low base containing diagnostic treatment and supply spaces; an intermediate scheme with a lower tower containing 200 beds per floor; and a third scheme with 250 beds per floor.

From all the bits and pieces of information the computer print-outs showed that Scheme II cut the total Scheme I man-hours spent in travel by one-third. Scheme III reduced the man-hours spent traveling in Scheme II by nearly 60% and thus clearly provided the most efficient travel design of the three.

The computer analyses the problem components quantitatively and qualitatively and what is normally conceived somewhat fuzzily as a problem of "intuition" is brought into sharper focus. The scope of the architect's art is expanded in the process.

The Air Products and Chemicals, Inc. selected a 500 ton/day air separation plant site near Wilmington, Delaware with the assistance of a computer. Thousands of data items, consisting of supply, demand, flow, cost of fuel, access to supply and demand, location of supply and clients, a pattern of distribution, time to construct plant, proximity to transportation facilities, and off season productions, which could be formed into linear equation were fed into the computer. It not only pinpointed the location but indicated when the growing market would support such a plant.

In Boston last December, 500 architects assembled, listened, and discussed the computer as an aid to the architect. After allaying the fears of some that the machine was going to take over, speakers illustrated some ways the computer could relieve the architect of some time consuming tasks and even projected ways it could be used in the future.

Boston structural engineer William LeMessurier explained how the Structural Engineering Systems Solver (STRESS) has been used in his office. It is a standardized computer program that solves structural problems. It is designed to accept simple language instructions which most anyone could use. Other uses described were calculations for duct sizes for air conditioning and lighting fixtures for light requirements.

Professor Steven Coons of MIT showed a sketchpad process which draws a picture. In Sketchpad, the operator uses a light-sensitive pencil containing a photo-diode to draw on the surface of a tube similar in appearance to a TV screen. The light pencil reacts to minute glowing dots on the surface of the screen sending an electrical impulse back to a computer that registers the position of the dots with which the pencil made contact.

The machine is programmed so that the patterns roughly traced by the light pencil can be formalized into exact images: straight lines, equilateral polygons, perfect circles. The size of the image can be increased, decreased, or duplicated and the orientation rotated. An image can also be erased and brought back. An operator can draw a plan in one quadrant of the screen and simultaneously produce two elevations and a perspective in the two other quadrants. One can readily visualize the prospects this has for form design.

These light pencil techniques can be used in several ways. The operator takes the light pencil and draws a cantilevered truss on the screen. He then feeds in the loads on the truss and instructs the machine according to the STRESS programs to give him the stresses in the individual members. If he does not like the results, he can modify the truss and go through the whole procedure again, evenutally coming up with an optimum.

Professor Serge Chermazeff of Yale implored the architects to come out of their "shells" and accept the challenge of solving problems of environmental design at a generalized level, the architect being an agent who adapts an established building type and form to a particular set of circumstances. "We can now say good-by to the slow laborious process that makes a guinea pig of every client."

From the Boston conference it was possible to envisage, according to the reporter, in the not too distant future architects and planners being able to receive engineering data and evaluation of functional characteristics almost instantly, at any stage in the design process; and specifications and working drawings of the finished product could be produced with great rapidity using computerized techniques.

Can the computer design school buildings? No. But, you see, it has been used effectively to assist in the design procedures and will be used in the future even more effectively. The use of the computer has been here only a short time and if improvements continue in the future at the same rate as they have in the last ten years, we will have a more sophisticated computer which will perform more complicated tasks at an even greater speed.

The first computer was a huge box of vacuum tubes. The present day computer is built with transistors and is about the size of an ordinary refrigerator, but the computer of tomorrow will have film with magnetized dots as conductors and will be the size of an attache case. Instead of a speed of microseconds (1000th of a second) it will produce in nanoseconds (1,000,000th second). Instead of reading simple instructions in numerical terms, it will read any form of printed material and will accept instructions and produce output in audio form.

In this space age when new knowledge is exploding constantly—so fast it is almost impossible to record all of it—it is of the utmost importance for architects and planners to keep abreast of new techniques. In a recent conference in Detroit some experts warned that architects and planners must ride the computer wave of the future or be left behind. School buildings cannot be designed by computers but computers can be used advantageously by architects and planners. Let's take advantage of the new tool!

In the question and answer period which followed, a number of points were made:

It was learned that a school district with limited funds would be able to use computer services in designing a school building by various management techniques. A Central Computing Agency is being considered for states and larger school districts under Title V. Funds are also available for local district computer services through various offices of H.E.W.

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TOTAL ENERGY SYSTEMS

BASIL L. HICK

Probably all of you know what the topic means, but for those who have been unable to keep up with this aspect of facilities planning, I would like to define the topic as follows:

A total energy system is a system which provides all of the varied energy requirements for a total plant from a single fuel source. The various energy requirements with which an educational facility must be concerned include heating, cooling, lighting, and power for motors.

The stated objective, as reported in most of the literature for the total energy system, is to develop mass produced energy systems that will pay for themselves in annual fuel savings by on-site generation. Obviously, the initial cost of such an installation will be higher than the conventional method of taking care of energy requirements—thus, the long-term look. This, incidentally, is the approach we ought to use on all aspects of planning, from surface finishes to flexible partitions. However, this immediately raises a difficult problem in many districts throughout the country where bond issues are subject to public vote and thereby affected by ever-increasing pressure to keep initial costs down. Moreover, people quite often have a difficult time making judgments on new approaches to education. Thus, it might be difficult to introduce a mechanical system which is new and has proponents and opponents among the engineers.

To me, this concept is not an entirely black or white issue in all plant programs. Before a decision can be made, pro or con, about a total energy system, there are certain factors which one must evaluate. Among those factors are:

1. Initial and ultimate size of plant
2. Type and source of fuel
3. Sophistication of the system in the specific fuel
4. Rate of change for energy requirements in total plant
5. Availability of technical personnel to operate plant
6. Ability of organization to employ and retain such technical or professional operators of such a system
7. Location of system and safety implications

Size of Plant

The first factor mentioned, that of initial and ultimate size of plant, could very quickly decide the issue, particularly if we were considering a neighborhood elementary school on a limited, unexpandable site. It might not be as quickly decided, however, in the case where the initial unit of a community college is being constructed. This would be particularly true if such a facility were located in a rapid growth area and were located on an adequate site which would allow for a considerable increase in enrollment. According to present studies, the minimum requirement for a T.E.S. system would be for a 3,000 kilowatt installation.

Type and Source of Fuel

The source and type of fuel is a factor which cannot, in my opinion, be quickly decided. The types which are now used are generally limited to natural gas and oil—No. 2 through bunker C. However, there are other fuels which should be considered. Obviously, a nuclear submarine has a total energy system which uses neither of the fuels now used in educational total energy systems. Some of the public utilities are operating power plants which use nuclear fuel.

While we try to forecast the fuel we might use in the total energy system, we might pause and give some thought to an observation by Dr. Elliott of Pittsburgh, which seems to indicate that, although the trend of fuels historically has been from coal to oil to gas, there now is some trend back to liquid fuel from coal.

It might be said, however, that once you install a total energy system, the chances are you will be tied up for years with your source of energy and, thus, might be quite inflexible for individual changes.

Sophistication of the System in the Specific Fuel

Although the common fuels of gas and the various grades of oil seem to indicate there is much sophistication within these fuels, the other possibilities as an energy source for such a system, namely, nuclear and liquid fuel from coal, are being investigated from many aspects. Nuclear fuel source is involved in much experimentation; as a result, developments have taken place in the use of this fuel which have resulted in the power plants becoming obsolete before the structure which housed the plant was complete. This point has been made numbers of times with the nuclear submarines. This might be all right for a public utility or for a defense installation, but I believe research and experimentation in this area would be a dangerous practice for an educational institution.

The amount of money spent on research by educational institutions is less than one percent of their total budget, on a nationwide basis. In fact, an estimate in 1960 seemed to indicate that only about 1/200 of the amount of money spent on education could logically be assigned to research. Experiment for research in industry frequently runs to 10 percent of their budget. Thus, it would be my feeling that any experimentation done by an educational institution be directed toward the improvement in the quality of education.

In adopting a total energy system, it seems to me that we are tied up for years with heating design, cooling design, lighting design, and power design. Thus, from a flexibility point of view, there are many limitations. Even though fairly sophisticated systems have been developed in some energy fields, the fact that these are still changing at an ever increasing pace should demand that the whole problem be given thorough consideration before a decision is made. We should not find a lot of schools equipped with either incandescent or fluorescent fixtures being lighted with luminous walls and ceilings which might be activated by radar beams.

Rate of Change for Energy Requirements in Total Plant

Today is a time of rapid change, not only in the educational field but in all other fields. I expect that there were changes even when our schools were heated by wood and lighted by candles, but at this time changes in fuels, as well as within fuels, seem to be more rapid. To fix on any one fuel or a system within a fuel might be hazardous. I have already mentioned the developments and the rapidity of these changes which have taken place in the nuclear field, as well as what seems to be a trend possibly back to a liquid fuel derived from coal. Even after one has decided on the source of energy, the type and form for transporting the energy to the appropriate place is rapidly changing. So also are the components developed to use the resulting energy. For example, some of the voltage requirements in a school such as 110, 208, 220, 277 or 480 which are necessary to provide energy for lights or motors have been developed in recent years. Thus, power requirements for lights, motors, ranges for school lunch programs, refrigeration from thermo-electric units, and higher frequency utilization are but a few items one must consider and must try to predict the future of before settling on a total energy system. It should be noted that utility companies cannot agree among themselves as to voltage utilization, frequency utilization, transformer locations, transmission and distribution systems. The energy requirements for all structures, schools included, are jumping by leaps and bounds. In 1896 it was generally recommended that a .4-foot candle be provided for classroom lighting (incidentally, this is about the level which some people want for note taking for educational movies). Now, of course, you know that school people are saying the minimum desirable is 70-foot candles. I won't go into quality or other measures used for determining lighting. The fact is, however, that more energy is required to provide light for tasks to be done in schools. Moreover, with the expansion of the school lunch program, energy requirements have been increased.

Nowadays we hear more and more about the year around school. In New York State this past summer we had approximately 350,000 students enrolled in public elementary and secondary schools. If we believe that a correct thermal environment is necessary for better production and learning, we obviously should include air-conditioning in the basic structure. This, of course, should not be planned only for schools which are used during the summer. It should be provided, and can be justified, on the basis of degree days in many states for schools following the traditional 10-month program. Again, in New York State, it is estimated that approximately 40% of the days in which schools are in session the outside temperature is high enough to require cooling in order to maintain a reasonable indoor temperature. Our schools usually start just after Labor Day and finish the last week in June. Cooling obviously adds another energy requirement.

The installation of computers, electrical office machines, learning laboratories, sophisticated instruments and/or machinery in the vocational, industrial or technical shops adds considerably to energy requirements.

Since in New York State, we have approximately 20,000 classrooms in schools which are over 50 years old, you can see that in some schools we keep custodians busy fanning the switch boxes to keep them cool or changing blown out fuses because circuit breakers were non-existent when these buildings were constructed. It really isn't this bad, but it emphasizes the energy requirement change during the life of a building.

Availability of Technical Personnel to Operate Plant

At a time when many organizations require a high school education as one qualification of a custodian, it seems to me that the problem of obtaining competent people to run a total energy system is one to which careful thought should be given. Even though some of the literature seems to indicate that these are push-pull systems, one needs to recall the number of people necessary to keep the vending machines operating at the World's Fair or the number needed to keep automatic elevators running, to realize that competent personnel are necessary. Engines have to be overhauled, systems must be balanced, electronic devices must be maintained. These are but a few of the personnel problems to be faced when considering a total energy system.

Ability to Employ and Retain Technical or Professional Operators

Public institutions, historically, have lagged behind private industry in salaries; thus, the need to acquire and retain competent people in this area is a real one. In the comparatively new field dealing with computers, districts are essentially acting as training agencies. The people they get to run their computer programs are soon offered, and generally accept, positions in private industry just about the time they become competent in the eyes of the educational institution. It seems that this same possibility would undoubtedly exist with people who would be trained and responsible for the operation of a total energy system in a school.

Location of System and Safety Implications

Since throughout the United States the various school districts operate under different building and safety requirements, the location of such an energy converter and the safety implications should be investigated closely. For example, in New York State, such a system would have to be located in a separate building because of the use of a high pressure vessel utilization and because of the use of high pressure gas. Obviously, if other fuel sources were used, this would not be a deterrent to the location of such a converter within a conventional school in New York State. It is generally agreed that there is an acoustical problem involved with these systems and, as a result, the location again would demand careful thought and planning, either in the actual location so that the sound could be isolated, or in the construction so that the noise could be reduced to an acceptable level. One should not assume that noise can be controlled without proper planning.

I have tried to stress caution in this paper. School districts, because of the varying and peculiar problems they face, have requirements that differ considerably from all other types of organizations. Hence, I believe that we should take a long forward look, before committing ourselves to a total energy system.

The discussion that developed after the presentation centered around the following questions:

1. *Should the Council encourage research on total energy systems especially in those systems currently in operation?*
2. *What is the responsibility of industry in the area of research on fuels and total energy systems?*

3. *What is the anticipated life span of equipment now in use and how can this equipment be economically updated or replaced?*
4. *Can the power rate be changed depending on use especially as it may be affected by change-over to other power sources?*
5. *Why consider a total energy system if adequate power sources are available at reasonable cost?*
6. *Can the energy already available as a by-product be redistributed and reused elsewhere in a plant?*
7. *Under what conditions is it economical to install a total energy system?*

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ADAPTABLE SCHEDULING AND BUILDING DESIGN

JAMES M. THRASHER

For the next few minutes I am going to talk to you about my impressions and views of *flexible scheduling* related to the time secondary youngsters spend at school. I want to discuss with you how the problems and opportunities associated with it should be influencing the way you and I work at our job of planning better facilities.

FLEXIBILITY—ADAPTABLE SCHEDULING

We have talked for a long time about flexibility. We often have used it to describe the school plant. It has meant something different to almost everyone who used the term. For example, if a building had a non-bearing partition that could be knocked down; if it had a demountable wall section that forty men and a boy could move over the weekend, it was called flexible by someone.

So that you can know what is being called flexible in this section meeting, I will attempt to refer to it as *adaptable scheduling*. This means that the assignment of time units can be changed at will to suit someone, and that the grouping of students for instructional purposes can be altered to suit the needs of the scheduled learning task.

It is difficult to discover just what the current status is regarding the use of *adaptable scheduling* in this country. There must be a number of school districts utilizing it or experimenting with it. When one examines many reports of so-called flexible scheduling it is found that they consist of equal length periods each day which are moved or rotated. In some cases the sizes of student groups may be altered from time to time.

I would like to share with you two examples of *adaptable scheduling.*

At this point Dr. Thrasher presented several overlays showing typical examples of a standard teacher's program and a student's program, the type to which we have been accustomed for the past 30 to 50 years. He first pointed out the sameness of the program year after year and the inflexibility with respect to the teacher's work day in relation to his own program and to the program of his associates. Then Dr. Thrasher presented an overlay depicting the daily program of a class level in high school. The class consisted of some 180-240 children. Using the system for adaptable scheduling *(this is Dr. Thrasher's special name for this contemporary type of programming) based upon the idea of Dr. Dwight Allen of Stanford University, Dr. Thrasher described by overlay his idea of what a good flexible scheduling program would be like.*

IMPLICATION FOR DESIGN

If we believe that the mission of school planning people is to assist the teacher and administrator to express the educational needs of a building project to the architect, we can only assume that adaptable scheduling has some real implications for school design. Up to this point we have been talking about only two dimensions of the problem. One dimension is the unit of time arrangement in our schedule. The second dimension is the size of the grouping of students. The third dimension is as vital in the implication for design as either of the first two. This is the *learning activities* that will be carried on within the various arrangements of units of time by the groups of students.

This third dimension of learning activities may need to be divided into two categories or classifications in the prose description that must be conveyed to the architect. These may be the main or major activity and secondary or sub-category activities. An example of a major activity scheduled for a given group might be to perform laboratory tests on strength of materials. A secondary activity may be to record data and write reports on observations. Your imagination and insight into the learning-teaching process will be the only boundaries to examples you can envision.

CONCLUSION

I would submit to you that the life of the school planner is becoming more hectic as time goes on. There are some who long for the old simple egg-crate design and the argument over single or double loaded corridors. It seems to me that we work in an exciting time in school design.

Here Dr. Thrasher presented an overlay in three dimensions which diagrammatically measured education in terms of the unit of time, the grouping of learners, and the factor of learning activities.

Our job is to work with the three dimensions of the problem—*unit of time—changing grouping of learners—and learning activities.* From these efforts will come school plants that enhance the work of teachers instead of thwarting their teaching efforts.

RESEARCH IN SCHOOL PLANNING

RESEARCH STIMULATION SEMINARS

ARTHUR E. WOHLERS
Bureau of Educational Research and Services
Ohio State University

A COMPREHENSIVE STUDY OF HOURLY AND DAILY SEWAGE FLOW RATES IN FLORIDA PUBLIC SCHOOLS

MILTON E. REEDER
Associate Professor of Civil Engineering
University of Miami
Coral Gables, Florida

A STUDY OF THE FACTORS INVOLVED IN ESTABLISHING GUIDELINES FOR THE PLANNING OF SCHOOL PLANTS

NILE O. MCCRARY
Director School Plant
State Department of Education
Nashville, Tennessee

THE EDUCATIONAL AND EXPERIENTIAL BACKGROUNDS AND PRESENT POSITIONS OF SCHOOL PLANT SPECIALISTS

THELBERT L. DRAKE
Assistant Professor of Education
Southern Illinois University

RESEARCH STIMULATION SEMINAR

ARTHUR E. WOHLERS

Members of the Research Committee have a number of beliefs with which we are certain many of you agree. Some of these are:

> There is a sparsity of research in the field of our major interest-school plant planning
>
> There is considerable potential for conducting research in the membership of the Council
>
> Council members can be stimulated to become more involved in research
>
> The Council membership's position with respect to research may appear to be like a cocked gun. To carry the bullet to the target, the trigger needs to be pulled.

The Research Committee plans to take the initial step in the trigger pulling or research stimulation process. As we contemplate this initial step we are pleased that there are those among you with whom we have discussed this plan and who are heartily in agreement with its purposes. Two of the Committee believe that the initial step should be in the form of a research stimulation seminar. The seminar is tentatively being planned for the spring of 1966.

The tentative plans for the Seminar are:

1. To bring together 20 to 30 Council members who have shown an interest in research in the plant field and who have a tentative problem they would like to pursue. These people might pursue individual research interests or teams of 2 or 3 from the same unit or region might work on a common research project.

2. These people will be inivited to participate in a 3 or 4 day research stimulation conference, possibly on a university campus where a number of research specialists are on the permanent staff.

3. The format of the seminar is likely to include presentations by research specialists on such topics as

   —Trends in research in the plant field
   —Areas of needed research
   —Proposal writing
   —Research techniques applicable to the plant field
   —How to report research findings
   —Sources of funds to support research people
   —How to use PERT techniques in research programs
   —The role of computers in the research enterprise.

4. The seminar will provide opportunities for the participants to work closely with research specialists for a major portion of the conference period on any phase of the individual's research interest. The hope is that each person or each team attending the seminar might leave the seminar with a research proposal well outlined or written, at least in preliminary draft form.

5. It is the plan to have each seminar participant outline briefly his research concern some weeks in advance of the conference, so these outlines can be analyzed prior to the meetings.

As an outgrowth of this project we hope to learn the kinds of competencies that are required to do school plant research and to learn the skills that are available within the membership.

If the need for training emerges, the Council should determine whether or not it has any responsibility for providing in-service research training programs. It is conceivable that the Research Committee or the Professional Activities Committee might provide one or more institutes for Council members interested in sharpening research skills. It is believed that the U. S. Office would support one or more institutes of this nature.

It is this Committee's plan to secure outside funds to support the total cost of the project—including travel and subsistence expenses for the seminar members. We have been requested by representatives of the U. S. Office to submit a proposal to secure funds to support the seminar and I have been asked to write a proposal to be submitted in the next several weeks.

The Research Committee has suggested that I assume a large measure of responsibility for the conference. It would be helpful if each of you who is interested in some element of school plant research would write to me as soon as possible indicating your interest in the conference and a potential research problem.

A COMPREHENSIVE STUDY OF HOURLY AND DAILY SEWAGE FLOW RATES IN FLORIDA PUBLIC SCHOOLS

M. E. REEDER

A summary of the research report is presented below. The original report is available from the authors, Milton E. Reeder and William J. Fogarty.

INTRODUCTION

The per pupil per day and hourly flow rates of sewage from public schools are the bases for establishing the design criteria governing the construction of individual school treatment facilities, the service fees to be charged schools by privately owned sewerage utilities, and load factors incurred in municipal treatment plants due to new school construction. The accurate quantification of these flow rates is vital for the safe, economical, and equitable control of public health relative to schools.

A survey, conducted by the Florida State Board of Health in 1958, showed a wide variation in the recommended sewage flow rates used as a basis for sewerage design in public schools among the 43 state boards of health responding to their questionnaire.

From a review of the literature it appears that, historically, the various standards for sewage flow in schools have been established as direct functions of water consumption with little or no regard for leaks, lawn watering or other water uses not contributing to sewage flow. These factors are erratic in their occurance and extent, and their effects make uncontrolled water consumption a questionable, if conservative, estimate of sewage flow.

The purpose of this research was to accurately determine the sewage flow rates in Florida public schools and to identify the characteristics of these flows to provide a more precise basis for the establishment of the criteria governing sewerage design for schools.

The preferred basis for sewerage design criteria is the direct measurement of sewage flow. However, the means to accomplish this economically have not been available until recent years. The rapid expansion of metropolitan areas has resulted in schools being established in suburbia beyond the range of existing sewerage systems. Where septic tanks were inadequate to handle the sewage flow from these schools, collection wells were provided from which the sewage was pumped periodically to individual treatment facilities or through force mains to adjacent sewer lines. These collection wells, when instrumented with a liquid level sensing device, provide a simple but accurate means of measuring sewage flow.

Unfortunately in Florida there were too few schools thus equipped to adequately reflect the overall characteristics of the state school system. In order to insure an adequate sample size for this research, it was decided to measure "controlled" water imput at all schools tested and to measure simultaneously the corresponding sewage output at a subset of this group where sewage collection wells were provided. Based on these simultaneously recorded data a correlation factor was determined to convert the recorded "controlled" water input data to equivalent sewage output.

The justification of using controlled water input as a measure of sewage output was born out by subsequent statistical analyses of the test data which indicated a correlation of 98.9 percent. Statistically this infers that 97.8 percent of the variability in sewage flow is a function of the controlled water input, as affected in this study, is in fact an excellent measure of sewage flow.

SAMPLE SELECTION

In order to establish an overall profile of the identifiable characteristics of the public school system of the state, and to facilitate the selection of a representative sample of these schools, all county school systems were surveyed by questionnaire to determine for each school:

1. Enrollment
2. Grade levels
3. Location
4. Race
5. Date of construction
6. If served by cafeteria and/or shower facilities
7. If water system was metered and number of meters
8. If served by a central sewage collection well from which sewage was pumped periodically to a separate treatment facility or adjacent sewer line.

REPRESENTATIVENESS OF SAMPLE

In all, 158 schools were tested for water flow data and 42 schools for sewage flow data for an average of 5 days at each school. These two groups of schools tested represent 9.0 and 2.4 percent of the public schools in the state, respectively.

The standard procedure followed at each school is listed below:

1. At each school the principal was assessed of the purpose and procedures of the study. He was given a tabulation form and requested to report the actual attendance, meal and shower count at his school for each day of the five day test period.
2. With the consent of the principal, the custodial personnel were instructed not to water lawns, wash windows or otherwise use water that did not return to the school sewer system.

3. Water input data was recorded in either of two ways: (a) Continuous monitoring by a recording device attached to the existing water meter(s) serving each school. Or where conditions did not permit this method, by (b) visual reading of the totalizing register twice each day, prior to and following normal school hours.

4. At those schools having a central sewage collection well, sewage output data was recorded simultaneously with water input. The sewage flow recorder was installed and operated as discussed previously.

5. The dimensions of the collection well were determined from the "as built" plans and verified in the field.

The major sources of divergence from the ideal closed system and the compensating controls and adjustments imposed were considered to be:

1. Leaks in the water distribution system:

   As this system was pressurized these leaks resulted in water loss (exfiltration). Where excessive night flow indicated leakage and the volume could be accurately determined, the daily water flow adjusted accordingly. When accurate determination was impossible the data were abandoned. Minor leakage through various shutoff and flush valves was not adjusted as this was considered contributory to normal sewage flow.

2. Lawn watering, window or patio washing and other use of water (by custodial personnel) not returning to the school sewer system:

   This use of water was specifically suspended during the period of testing at each school by consent of the principal.

3. Water consumed and sewage contributed by students:

   It may logically be assumed that the effects of this item, extended over an entire school day and the total school population would be minor and tend to be self canceling.

4. Leaks in the sewage collection system:

   All identifiable leaks in the sewer lines resulted in sewage gain (infiltration). The major source of these leaks was rain water runoff into manholes. Due to the non-uniformity of this inflow, adjustment was usually impossible and the data were abandoned. Other minor leaks were also assumed to be infiltration as the major portion of the testing was conducted in coastal areas and the attendant high water table would tend to negate exfiltration in a gravity system.

5. Back flow through sewage lift pumps:

   Back flow resulted from sporadic failure of the check valve on the pressure side of the pump to close following pump down. However, this condition was readily identifiable on the recorded sewage flow charts. Due to the non-uniformity of this back flow, adjustment was impossible and these data were abandoned.

RESULTS

The comparative effects of the first six parameters on the average rate of sewage flow in gallons per capita day were detailed in the report. For purposes of these comparisons, all data were adjusted to 100 percent of students eating meals and 0 percent of students showering. In this way the effects of varying percentages of student meals and showers from school to school were minimized. These comparisons were based on 765 pieces of data recorded throughout the state with the exception of the seasonal comparisons. As Dade County was the only location where data were recorded during all three seasons, only these data were used for seasonal comparisons so as to eliminate geographic effects. Socio-economic data relative to individual school neighborhoods were not found to be available. For this reason, the comparison by economic status is based on the relative economic rank assigned each school neighborhood by the study field representative.

Study of the figures indicated that day of the week, geographic location, season of the year, economic status, race, and type of cafeteria had little or no significant effect on the average rate of sewage flow. For this reason further statistical analyses of these parameters were not deemed necessary.

Whereas, enrollment was initially considered to be a parameter of major concern, subsequent statistical analysis indicated that the effect of enrollment on the rate of sewage flow per capita day, was not significantly different than zero.

The range of effects on the gallons of sewage flow per capita day due to the percentages of students eating meals and showering were indicated in the study and are summarized below:

Figure 10—GALLONS OF SEWAGE PRODUCED PER STUDENT-MEAL AND PER STUDENT SHOWER

	gals. of sewage produced per student meal	gals. of sewage produced per student shower
Mean value	1.00	1.51
Mean + 2 std. dev.	0.47	2.18
Mean − 2 std. dev.	−0.07*	0.67

*Minus sign indicates that 2 std. dev. exceed the mean.

Two basic categories of schools were considered in this study; First, schools with cafeteria but without shower facilities, and secondly, schools with both cafeteria and shower facilities. Daily and hourly flow rates were analyzed statistically for schools in each of these categories. A condensation of the results of the analysis of daily flow rates is shown in tabular form below: The results of the analysis of hourly flow rates presented show the accumulation curves of hourly flows in the chronological order of their occurrence, whereas, figure 13 shows the accumulation of maximum continous hourly flows in the selected order of decreasing magnitude.

Figure 11—A CONDENSATION OF THE RESULTS OF THE STATISTICAL ANALYSES OF DAILY SEWAGE FLOW RATES

		schools with cafeteria	
		without showers[1]	with showers[2]
Mean value	(gpcd)	5.82	7.58
Mean + 2 std. dev.	(gpcd)	9.16	11.32
No. of days of data		425	340
No. of days flow exceeded line 2		21	15
% of time line 2 not exceeded		95.1	95.6

[1] Adjusted to 100% meals served.

[2] Adjusted to 100% meals served and 100% of students showering.

RECOMMENDATIONS

Based on the results of this research the following criteria governing sewerage design for Florida public schools are recommended:

DAILY SEWAGE FLOW RATE

	Cafeteria	Cafeteria + showers
gallons per capita day	9.5	11.5

CONTINUOUS HOURLY SEWAGE FLOW RATE

Duration of Continuous Flow	Cafeteria	Cafeteria + Shower
	gallons per capita	
1 hour	2.0	2.2
2	3.7	3.9
3	5.2	5.3
4	6.5	6.8
5	7.6	8.2
6	8.4	9.2
7	8.9	9.8
8	9.1	10.3
9	9.3	10.7
10	9.4	10.9
11	9.4	11.1
12	9.4	11.1
18	9.5	11.4
24	9.5	11.5

These values were based on 100 percent of students eating meals and 100 percent of students showering. It was recommended that whenever cafeteria or shower facilities were provided for the general enrollment the above values be used. Where physical conditions were known to exist which would increase or decrease actual 100 percent use of these facilities (i.e. parent cafeteria preparing meals for other schools, or combined elementary and junior high school where only the junior high students are authorized to shower) the following adjustment factors were recommended:

		Meals	Showers
For each student in excess of 100% of enrollment,	ADD	+1.0 gal	+2.2 gal
For each student less than 100% of enrollment,	SUBTRACT	0.0	−0.7

A STUDY OF THE FACTORS INVOLVED IN ESTABLISHING GUIDELINES FOR PLANNING SCHOOL PLANTS

NILE O. MCCRARY

The school building designed, constructed, and equipped according to predetermined educational requirements should more nearly aid in the implementation of a quality program of education. The degree to which quality education is achieved in the future could largely be determined by the willingness to provide school plants which will facilitate the attainment of desired educational outcomes.

Because of the recognized importance of a functional school plant and the importance of a good visual, sonic, and thermal environment for increasing educational efficiency, school administrators and boards of education are concerned about guidelines for planning future facilities. The unfortunate and somewhat tragic evidence in many communities rests with the fact that providing school facilities is considered only after the existing school plants are filled beyond capacity rather than in advance of the need. It is a generally accepted fact that better facilities result when long-range planning precedes the need.

The purpose of this study was to identify essential elements of a program of school plant planning, and on the basis of this identification to develop guidelines for planning school facilities, grades 1-12 in Tennessee.

The problem was developed under the following sub-problems:
To trace the historical development of school plant planning in Tennessee.
To identify the elements commonly found in or recommended for inclusion in a program of school plant planning.
To identify and appraise the elements considered characteristics of a program of school plant planning.
To develop guidelines for planning school plants based on the elements identified and appraised.

This study was limited to identifying and appraising essential elements of school plant planning. No attempt was made to identify specific considerations other than those used as supporting factors for the development of essential elements in the guidelines.

The study was limited to information available from literature and from interviews with educational administrators, professional consultants, and architects who were engaged in school plant planning.

An assumption underlying this study was that the review of literature and interviews with authorities in the field of school facilities would reveal the types of general considerations which should be included in guidelines for planning school plants. The historical development of school plant planning in Tennessee was traced as background information to the basic problem. Primary sources utilized in collecting information related to the historical development of school plant planning were the records and publications in the Tennessee State Department of Education, *Annual Statistical Reports, Rules, Regulations and Minimum Standards* of the State Board of Education, and the *Public Acts of Tennessee.*

The appraisal of tentative elements identified and a final selection of essential elements were recognized as critical tasks in terms of the total study. The elements tentatively identified as essential to administering a program of school plant planning were submitted to a jury of educational administrators, school plant consultants, and architects, who are currently or have recently engaged in planning and designing school facilities. The jurors were asked to rate the elements as to importance. The rating scale

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ranged from one to four. A rating of one indicated that the elements had no significant value in the planning process. If an element received a rating of two it had some value but was not vital to the total planning process. A rating of three signified that the element was of functional value in providing an adequate school plant. If the element received a rating of four, it was considered essential for the development of a school plant. Each juror was also asked to recommend other elements, to include them in the rating, and to make comments or suggestions.

The final identification of the essential elements in a program of school plant planning was based on the results of the jury rating, recommendations, comments and suggestions. Elements receiving a mean rating of 3.5 or more were considered to be essential. Elements that received a mean rating of at least 2.5 but less than 3.5 were considered to be highly desirable. The conditions of the study were that all elements which received a mean ratio of 2.5 or better would be included in the guidelines for planning school plants.

The elements rated as essential and those rated as highly desirable were considered characteristic of a program of school plant planning and were utilized as planning steps in the guidelines. Each element was developed to include specific planning considerations necessary for the completion of the individual step in the program of school plant planning.

Because of the number of elements of a general nature and the difference in listing what appeared to be basically the same type element, an interpretation was necessary as the tentative list was prepared. The general elements most frequently recommended in a rather extensive list of literature concerned with school plant planning are as follows:

1. Determining school plant needs
2. The development of standards and educational policy
3. Selecting an educational consultant
4. The public relations program
5. Legal problems and services
6. The school plant survey
7. Planning the educational program
8. Preparation of educational specifications
9. Site selection and acquisition
10. Architectural services
11. The financial program
12. Construction services
13. Selecting furniture and equipment
14. Accepting and occupying the building

Of the fourteen general elements, twelve were listed in more than 50 percent of the publications. One element, "Architectural Services," was mentioned 100 percent of the time. The fact that "Architectural Services" was mentioned more than any other element is charactristic of the trend found throughout the historical development of school plant planning in Tennessee. It was found that as early as around 1900 architects did most of the writing concerning school plant planning.

Two elements that appeared in less than 50 percent of the publications were "The Public Relations Program" and "Accepting and Occupying the Building."

The fourteen general elements were submitted to a jury of ten members who were recognized authorities in planning school facilities. The jury was composed of six educators and four architects. Seven of the ten jurors are members of the National Council On Schoolhouse Construction. Twelve of the fourteen elements received a mean rating of 3.6 or better, and the other two elements were rated highly desirable. According to the conditions of the study, all fourteen elements were considered characteristic of a program of school plant planning.

Two of the elements, "Determining School Plant Needs" and "Architectural Services," received a mean rating of 4.0. Two others, "The Public Relations Program" and "Selecting An Educational Consultant," received low mean ratings. A summary of the elements used to establish guidelines for planning school plants, along with supporting factors, are as follows:

1. *Determining School Plant Needs.* Identifying needs, factors which determine needs, and guiding principles relative to needs were treated in the development of this element. Long-range planning constitutes the major factor in determining school plant needs.

2. *The Development of Standards and Educational Policy.* School board policies relative to the building program included length of school term, progress of pupils, use of building, length of school day, school subjects to be offered, and school attendance center. The philosophy of the school and community and rules, regulations, state and local codes were given consideration.

3. *Selecting an Educational Consultant.* Selection procedures, and functions of the consultant were identified.

4. *The Public Relations Program.* School and public participation largely determine the success of a program of school plant planning.

5. *Legal Problems and Services.* Legal problems and the responsibility of the school attorney represent considerations in the development of legal procedures in a school building program.

6. *The School Survey.* Two types of surveys were presented. First, the plant survey, and second, the comprehensive survey. The major factors of a comprehensive survey were (1) Community characteristics and analysis,

(2) Organization and administration, (3) Instructional program, (4) Pupil personnel services, (5) Professional personnel, (6) School plant, (7) Pupil transportation, and (8) Finance and Business Affairs.

7. *Planning the Educational Program.* Eight steps in educational planning were presented. They were (1) The curriculum plan, (2) The operations plan, (3) The instructional plan, (4) The organization plan, (5) The personnel plan, (6) The evaluation plan, (7) The in-service education plan, and (8) The support plan.

8. *Preparation of Educational Specifications.* Recommended elements of educational specifications were presented. The main function of educational specifications was to provide a written guide to assist the architect and others interested in planning the building.

9. *Site Selection and Acquisition.* Site selection, site size, site acquisition and development were treated. The school site is considered as an integral part of the community's educational plant.

10. *Architectural Services.* The selection of the architect, contract with architect, fee and payment schedule, and the architect's functions, represent areas considered in the development of this element.

11. *The Financial Program.* The ways for obtaining school building funds in Tennessee were presented. Cost factors, school building economies, cost estimates, and procedures for establishing bond payment and debt service schedules were treated in the development of the financial element.

12. *Construction Services.* This element was developed through the treatment of two major steps: (1) Bidding and letting contracts and (2) Supervision of construction. The major role of the contractor is the actual construction of the building.

13. *Selecting Furniture and Equipment.* Furniture and equipment are integral parts of the total school plant. Nine criteria for selecting furniture and equipment were (1) Program adequacy, (2) Aesthetic qualities, (3) Color, (4) Finish, (5) Safety, (6) Durability, (7) Economy, (8) Completeness, and (9) Cost.

14. *Accepting and Occupying The Building.* The factors considered were (1) Final inspection, (2) Orientation of school staff, (3) The dedication, and (4) Evaluation.

The major conclusions drawn as a result of experiences gained and information obtained during the course of the investigation are summarized as follows:

1. Written elements considered characteristic of a program of school plant planning are useful in the development of school facilities.

2. The use of guidelines for planning school plant facilities is not practiced extensively; the lack of use of such guidelines, however, is partially due to the scarcity of them.

3. The school plant should be viewed as an educational tool. The plant may restrict the operation of the program as a result of its inadequacy, or it may enhance the program if the building is designed, constructed, and equipped according to pre-determined educational requirements.

4. A school plant may more nearly facilitate the attainment of desired educational outcomes if it is planned according to pre-established guidelines. This procedure not only results in a more functional school plant, but serves as an effective means for examining the entire educational program.

EDUCATIONAL AND EXPERIENTIAL BACKGROUNDS AND PRESENT POSITIONS OF SCHOOL PLANT SPECIALISTS

THELBERT L. DRAKE

PURPOSES OF THE STUDY

The purposes of the study were (1) to focus on the educational facilities specialists' educational and experiential backgrounds and his present position and how he felt about them in terms of his preparation for his present position and (2) to stimulate further study of the specialist by providing this focus and possibly some useful data.

We have been pleased to receive communications to the effect that plans are under way to continue studying the specialist.

NOT A STUDY OF AVERAGES

It was not the purpose of this study to determine what the "average" specialist was like or what his "average" experiences were. One obvious reason for not having this as a purpose is that you are too different in terms of backgrounds and present responsibilities in the field of school plant. This is as it should be. However, there is another important reason—that such a study would be based on the following fallacies:

1. All individuals are alike and bring the same things to an educational program.

2. All individuals perceive an experience in the same way and gain the same benefits from courses and experiences.

3. The average thinking of a group indicates the one best way for all.

4. Learnings gained from courses and planned experiences are the only essential learnings for adequate preparation for entry into the field.

To emphasize the above, I jotted down some "facts" that might give a picture of the "average" specialist from the data received from you. You might wish to compare yourself with this picture. The average specialist is forty-nine years of age, has a doctorate in educational administration (or at least a six-year certificate) and earns from $12,000 to $14,000 per year. He spends about 25 hours per week in the field of school plant and the rest of the time has administrative duties. As a matter of fact, he probably is not hired as a plant specialist and did not intend, as far as education is concerned, to become one. During the 25 hours per week the specialist confers with boards and administrators and has difficulty writing educational specifications, and has had this difficulty for the last 12 years since he entered the field at the age of thirty-seven.

Now we all know this is not a picture of you, but it does indicate why this was not a study of averages.

REPORT OF DATA

The major conclusions and recommendations of the study appeared in the *Newsletter,* Volume 3, No. 4, so I shall not re-state them.

During the course of the study it became evident that a distinction should be made between the school plant specialist and the school plant planner. We defined the "planner" as that person concerned with the relationship of educational program to the educational facilities in either or both long-range planning or planning for a particular building. The ideals presented are generally aimed toward the planner.

You suggested the following as ideal backgrounds: with a cognate area in sociology or urban planning, and including specialized courses such as plant planning, finance, curriculum, and urban planning.

Experiential backgrounds should include the usual teaching, building and central office administration sequence prior to a position in school plant. A period of time in these positions totaled eight to ten years rather consistently in the data you gave us. This would make the age entering the field about thirty-one or thirty-two. Work on field surveys to determine a community's educational and facilities needs was cited as being valuable. In the case of the planner, work with an architect or contractor or in the case of architect or engineer, work with an educator was cited as being important. Most of the experiential and educational backgrounds cited seemed to have at least two objectives for the school plant planner: (1) Provide understanding of construction planning and process and (2) provide experience in working with people in relating educational concepts and practices with the more technical aspects of educational facilities planning and operation.

QUESTIONS RAISED

Throughout the study it became evident that many persons became school plant specialists by edict or accident rather than by design. This in no way reflects upon the excellent job being done by school plant specialists. Rather, it raises some questions that must be answered before determining the direction that should be taken by the profession, professional organizations and educational institutions.

Is school plant a specialty in school administration or a complementary but separate profession?

The increasing need for planners, the trend toward younger men assuming these responsibilities, and the expressed need to provide helpful experiences prior to entering the field emphasize the problem of identifying personnel early. If they are identified, what education should they get that is different from that of school administrators?

Should there be professional registration or certification for school plant planners?

Most school plant planners hold teaching certificates or administrative certificates or their doctor's degree is accepted as certification. Whether viewed as a separate profession or a specialized facet of school administration, it would seem appropriate that professional organizations and institutions (e.g., N.C.S.C., A.A.S.A., state departments, etc.) should study this question to make recommendations.

Whose responsibility is it to present to local public schools the need for and advantages of having a full time school plant specialist on the staff?

Is it the responsibility of individual districts to discover the increased educational efficiency and monetary advantages of hiring a school plant specialist? Possibly it is the responsibility of state departments or the federal government or private foundations?

The profession (?) seems to be at the crossroads. It seems to have three choices:

(1) Travel the rugged road of upgrading itself into a highly—but broadly-trained profession, either as part of educational administration or as a separate profession,

(2) Nestle into the comfortable niche it has been forming in the general profession of educational administration, or

(3) Fragment into the highly specialized facets of school plant to the point of reduced communication between fragments.

VOCATIONAL AND TECHNICAL CURRICULUM NEEDS FOR HIGH SCHOOL AND JUNIOR COLLEGE—BUILDING IMPLICATIONS

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VOCATIONAL AND TECHNICAL CURRICULUM NEEDS FOR HIGH SCHOOL AND JUNIOR COLLEGE—BUILDING IMPLICATIONS

DONALD D. DAUWALDER

GORDON F. SMITH

Vocational education is something which has been with us for many years in one form or another. However, we placed little or no emphasis on it until Federal legislation in 1917 under the old Smith-Hughes Act. Then we had those programs with various modifications through World War II which established rather rote and traditional type vocational programs in most parts of the nation. There were extremes, however, extremes primarily between levels of education. On the eastern seaboard most of the vocational training was within the high school structure, mostly in the tenth, eleventh, and twelfth grades. Nearly all of the traditional programs attempted to train someone for a saleable skill at the high school level.

On the west coast the extremes were a little different. Very few of the high schools in California, for example, had vocational programs in the high schools except on a very exploratory basis, primarily industrial arts oriented. Most of them were concentrated in the community or junior colleges. They still were somewhat of the same traditional format covering the basic trades and crafts. They included some business education subjects, but very few, and I believe this was primarily because the federal government was not participating in the cost of business education programs until the passage of the Vocational Education Act of 1963 which was implemented in most of our states in 1964.

Altogether throughout the U. S. approximately six per cent of our high school population was in some kind of so-called vocational training. Most of the schools were concentrating on attempting to develop pure academic college preparatory type curricula. However, the percentage of high school graduates who attended college varied materially all over the country. The range ran from a low of three per cent in one of the counties in Appalachia to a high of ninety-plus per cent in some districts of high school graduates going to college.

Nationally, we are told that about forty-eight percent of the high school graduates actually continue on. However since approximately sixty-two per cent of the students in large urban centers who enrolled in ninth grade finished high school, we really were talking about some forty-plus per cent of the sixty per cent. The rest of the students in high school were given little or nothing which qualified them for employment.

Generally, students were given a broad type of curriculum; some called it a general curriculum, some called it non-college preparatory. Whatever its name, it consisted of general subjects, not qualifying the individual for enrollment or admission into major colleges nor qualifying them for any specific type of saleable occupation. Twenty years ago this wasn't a problem. Twenty years ago the average young man or young woman could go out and get a job, regardless of his level of education. In a survey I recently conducted in a commonwealth of Pennsylvania including parts of New York state, the average age of the unemployed was 49.4 years. The average educational attainment of the unemployed was the sixth grade; more than half of them had less than a fourth grade education. Now in natural resource based economies, this was sufficient twenty and thirty years ago to get a job shoveling coal or working in a steel mill. It is no longer sufficient.

Progressive schools are now pointing toward the training of a minimum of sixty per cent of their high school and junior college students for something other than pure academic college preparatory work. It may eventually lead to college completion. Many of the schools are concentrating on technical training; the technicians will go out into industry and may later receive baccalaureate and higher degrees.

THE PROBLEM OF PLANNING

Although these two types of education are not mutually exclusive, there is, however, a major problem in the planning and organizing a good modern program to train in the skills needed in today's and tomorrow's employment world. Curricula has to be modified drastically at high school, junior college, and college levels. Thirty-seven out of fifty-two of our major colleges, which were recently studied, have made no major modifications in their long term curricula for over fifty years. They have added new curricula, but they are still requiring the same things in the ones they previously offered. Our high schools and junior colleges and colleges must at least modify their curricula emphasis every half a century or so, I should think, to keep up with the very rapidly expanding technological age and new employment requirements.

Now how do we find out what is needed? This brings us, I think, to the crux of our problem. In four or five areas of the nation we have found it very practical to determine what is needed in the area of education by determining what employment is available currently and projected for the future. This requires rather complete surveys of the industrial complexes of the area to be served by the educational institution. From these industrial contacts should result the establishment of myriads of industrial advisory committees. In my personal opinion, there should be at least one for each major area of skill center training. For example, the school district with which I am now associated is offering fifty-four separate skill center curricula this year and will offer 137 next year. These are separate curricula—separate vocational programs as compared to the six or eight we traditionally hear about in most of our so-called Smith-Hughes types of programs in vocational education. Each of these programs requires an analysis of standards now and in the future. From this curricula must be planned, developed, and interrelated.

Now we find that there are four or five major areas or cores of occupational competencies carrying a great deal of similar knowledge requirements. Of the 63 technologies recognized currently by the National Science Foundation, 44 of them require almost exactly the same training for the first year to year and a half of specialization in those technologies. This, therefore, can be structured into a core concept for a good portion of the program, not requiring our past procedures structuring a separate type of facility for electronics, and a completely separate one of instrumentation, and a completely separate one for nuclearonics. Many of the facets of these three and others are the same and can be concentrated into a core, an introductory core. We believe this should be extended down into the junior high school and lower high school years on an exploratory and preparatory basis.

There is, for example, no such thing as a fixed number of semesters or months to train a technician, because no one actually knows what a technician is. It is a broad term, and it covers all kinds of things. Some so-called technicians can be trained in six weeks, and some so-called technicians require four years of speciality training and cannot get a job without a bachelor's degree. These are still technicians, and not engineers. The continuum is so broad, and the requirements are so extreme that as much as possible we must find out what is required, centralize these requirements into core concepts, and utilize as many of our instructional techniques and procedures, building facilities and planning methods as we can in order to structure the new to tie into an interrelated core.

This concept has another advantage with it too. I am sure many of you have heard comments made that many of our employees of the future will be changing their jobs two, three, four, and even five times. Although I do not entirely agree that a well trained person will be changing that often, there will be continuous learning required in more and more of our jobs. Each job that opens up requires more sophistication, more specific knowledge, and more training. Therefore, the schools have to take over more and more than they did before to provide the kinds of skills which conditions demand. We have a very limited industrial training complex and must compensate for it by offering more adequate educational facilities, which industry is willing to finance, to help provide us with equipment and facilities. The large corporations, G.E., U. S. Steel, Alcoa, and so on, are plugging for more and better training, more and better education, and more and better facilities.

I think we can interrelate these needs for training in a city or district of any size into a concept of teaching that is related in a core of vocational, technical, business, home economics, or in skilled services such as sales and distributive education areas. Then by establishing these as basic core, working from the common facets of the job and task, and finally by allowing for the promotion and selection of individuals to move into areas of specialization, our educational institutions will be able to turn out the labor force required by the nation tomorrow. I think this can be done only by persons like you, interested in the proper planning to provide and use these facilities so that this type of education and training can be offered in the many states of the nation where it is not now possible.

Mr. Smith next presented working examples of the technical core concept on slides. Two institutions were discussed, the Grosse Monte College and the Santa Anna High School. Mr. Smith discussed how the planning and development took place in these situations. He also provided copies of educational specifications and a floor plan for a technical core building.

EAST ORANGE EDUCATIONAL PLAZA

ROBERT H. SEITZER

Superintendent
East Orange Public Schools
East Orange, New Jersey

69/70

EAST ORANGE EDUCATIONAL PLAZA

ROBERT H. SEITZER

Unfortunately education in the big cities of our country, and in the communities that have developed in the shadows of these cities, is in pretty sad state. By suggesting the development of a Department of Urban Affairs the President showed us that he also knows this. It is disheartening to pick up almost any magazine and be told, as in a recent issue of *Look*, about the deplorable conditions of our cities.

Because I am a superintendent of schools, the presentation which I am going to make today is pretty much of an educational presentation. I think that the ideas we are going to propose have merit, but the architects, engineers, consultants, and others are going to have to help us make this a practical working reality.

One of the things that America has not been willing to do is spend preventive money; we spend remedial money under crisis conditions rather than preventive money under non-crisis conditions. I do not want very many superintendents in the country to have to spend as much time as I have spent in the last four or five years just keeping things under "control." The superintendency in the large cities, and in those in the shadows of the big cities, I, as a country boy, define as trying to hold a handful of frog eggs. We must do something to prevent the trial and error of the past and learn from one another. If we can do this we will have made a definite accomplishment.

There has to be some experimentation. However, one of the disappointing facts is that people hesitate to spend money on something called education experimentation. When research and development in industry develop a single missile or a single capsule or a single anything, they expect an 'X' percentage of failures, but those in the educational world are not expected, at least not encouraged, to do things unless we can predict in advance its success.

Now I do not have all the answers to the educational park or plaza concept, but today's presentation will be the eighty-fifth time I have given it and I am more excited today than I was the first time. However, as with much else, the more we know about it the more frightening it becomes and the more we realize that we have a tiger by the tail and something or somebody is going to get thrown. We have made up our minds that it is not going to be us. Now to proceed to the picture.

Dr. Seitzer then presented visuals which aided him in developing the presentation. Below is a brief summary of some of the major points and problems developed for consideration in the presentation.

In a city of over 80,000 population, a need is projected for a plant to educate over 12,000. This requires a facility now comparable to a college or university, but scaled to the age levels from 3 or 4 to 19 years with the proper separations in age groups which prove most effective.

A site of approximately 18 acres was selected within known geographic and projected man-made influences now taking effect within the city. In recent years, the city was divided by the Garden State Parkway running North and South; current demolition and construction will divide the city East and West by a new freeway. Much of the Central Westerly portion of the city has changed from residential to business and apartment zones on a major city scale. Adjoining the largest public school holding of open land and the only stadium, this site would replace sub-standard land-use occupancy centrally controlled within estimated pupil population, and convenient to entrance and egress from the Interstate Parkway system.

Projected trends would suggest a separation by age level in the following manner:

Nursery School to be related but removed from the general complex. One unit to be housed in present adjacent facilities on Lincoln Street and the others in facilities now under construction in the Southeast quadrant of the city. This would retain the only "neighborhood" feature to permit more direct and more frequent family participation.

The Primary Schools (Kentopp Center) would house age 5 to 9 years (K-4) and would be developed on a 240 pupil limit home base with total population of 3840 pupils.

The Middle Schools (Davey Center) would house age 10 to 13 (5-8) and would be developed on a 240 pupil unit basis with more movement on a level with a total population of 3600 pupils.

The Upper Schools (Scott Center) would house age 13 to 17 (9-12) and would be developed on a 240 pupil unit basis with movement on a level and greater interchange with other plaza centers. Total population of 3600 pupils.

The Junior College (Part of three structures) would house age 18 to 19 (13-14) and would be developed on greater individual initiative basis but with teaching units of 30. Total population of 1200 pupils.

Physical Education and Recreation Center (Redman Gymnasium) would consolidate sports, health and physical education as well as serve as the major city recreation center. It would contain all necessary gymnasium, swimming pools, etc.

Dramatic Arts, Music, Dance (Starr Lively Arts Center) would consolidate this special area of education.

Resource Tower. This structure would have as its base the academic facilities grades 13 and 14. From an upper terrace for staff dining and conferences, the offices for business and administration and all communications center would rise, culminating in a Curriculum Council arena wherein special projects by staff members and selected students could set patterns to refresh both teachers and curriculum in the systems, without the time lag now experienced where separate educational systems and sabbatical techniques are used to keep abreast.

Branch City Library—to serve as college and staff resource center with inter-service from main library.

Sub-Terrace Levels—Horizontal service flow and food preparation services from facility centers to all units; trucks, buses and conveyor systems would handle bulk movement.

Parking Structure—Adult, Staff and Community services to community centers and Resource Tower on ramp levels.

To distinguish this problem from other urban type structures such as the high rise office building and apartment, it was accepted that the high density of youth warranted maximum safety in vertical transportation: that the maximum height be set by the feasible number of stair towers from a terrace which would receive the total group in an emergency. This was resolved for age groups from 5 to 17 to be three stories. To avoid major traffic congestion problems, it was also resolved to stack schools in such a manner to move students once to their level in and once out, as a norm. This establishes the need to provide all regular programs and services within each unit on each level.

Age group 5 to 9 (Kentopp Center) has four homing units of 240 pupils on each level, approached by their own stairs to familiar surroundings through a complete educational session, with their own place for physical exercise, assembly and food service, each administered by a "supervising teacher" who could know each pupil by name and with a group of specialists, including a first-aid station, could care for any problem not warranting a special trip to the house clinic. The ground level would be devoted to the special problem of kindergarten where convenient access to play and shorter periods in the "center" would be expected.

Age group 10 to 12, (Davey Center) and age group 13 to 17 (Scott Center) have five units of 240 pupils on each floor with convenient resource center, assembly, physical education, and food service to maintain academic development without major loss of time blocks. Such special laboratories as science, industrial arts, music, fine arts, and team sport activities would be time-blocked to assure minimum deterrent created by the vertical movement to the under terrace area.

Each school of 240 would have available rooms for groups from 12-15, 30, 60-80-100 to 240 as an aid to teaching programs not necessarily on a team basis.

The logistics of providing 12,000 meals at a shift, with the 12-hour day introducing a greater potential, seems to suggest moving packaged and prepared food to the students rather than moving the students to the kitchens. It suggests high speed flow of staff materials and aids under terraces to each center and via elevators to each unit. It suggests all year, all weather comfort conditioning with the most effective "house type" communications via phone and television, with both area and closed circuit convenience. It suggests all machinery or "hardware" which improves the atmosphere for learning would become a part. Of higher importance in this study has come the concern not to lose the individual in the "mass." As "the plaza" is to Rockefeller Center, so would the terrace, the mall, the pools, the presence of plantings and trees be to this complex. We have reflected the conflicting problems of daylighting and visual aids in favor of the viewing strip where the sun and sky offer relief. The buildings are composed within the plaza to provide maximum sense of separation and individuality. Further refinement would develop all level outdoor terraces.

Dr. Seitzer presented the "Phasing In" drawings showing the possible sequence of steps to coordinate property acquisition, development of program, and withdrawal from present units.

He observed that further studies of detail will undoubtedly bring other adjustments resulting from this initial approach which will modify the size of certain steps and relate cost packages to economics.

SCHOOL CONSTRUCTION SYSTEMS DEVELOPMENT PROJECT— EDUCATIONAL FACILITIES LABORATORIES, INC.

JOHN R. BOICE

Project Director

SCHOOL CONSTRUCTION SYSTEMS DEVELOPMENT PROJECT—EDUCATIONAL FACILITIES LABORATORIES, INC.

JOHN R. BOICE

As you recall last year at your meeting, we had a number of people report to you on the progress of SCSD up to that date. Today I come alone, perhaps because we feel a little more confident of the progress we have made over the past year. What I have to tell you will be a little more in line with the objectives we had hoped to accomplish over the years of this project.

First, I intend to review the background of the problem so you will understand why we undertook the project in 1961 and what was involved. Next, I'd like to go through five phases of the project that we have already completed: namely, the feasibility study, the establishment of user requirements, the performance specifications, the bid submissions, and the development phase of the project. Then I will discuss the design and bidding stages we have recently embarked upon and point up some of the problem areas as I have seen them.

BACKGROUND OF SCSD

Let's take a look first at the 'why' of SCSD. We have a number of purposes, all of which are very noble. I'm sure most everyone would agree with this. It's nice to get better and cheaper buildings, buildings that will last longer and can be built faster. I am sure everyone wants to do this, but it has been very difficult so far through normal processes to achieve some of these objectives.

After the Second World War England had a great problem in constructing school buildings, for there had not been any construction during the war of course, and after the war materials were in very short supply. The school market could not obtain many of the critical materials so they cast around for a way to do some of the things that we have mentioned here—build buildings quickly, economically and better.

One of their answers was to develop a systems approach to building a school. Their system involved many building details and took care of more of the esthetic principals involved in the exteriors, etc., than we were willing to undertake. We had a number of conferences with architects discussing the problems of the project and they felt that architects should make many of the individual design decisions that the British had standardized into a system.

SOME OF THE PROBLEMS TO BE FACED

In order to tackle the problem properly, first of all, we had to try to bring the building industry into the twentieth century as far as industrialization is concerned. For, if you look at the way buildings are constructed today, it is evident that construction today is not a great deal different from that of 25 or 30 years ago. True, there have been some innovations, but these have taken place primarily in office structures and high rise buildings where a large budget which could support research and development for one single project was available.

The changing climate of the educational process, the demands that are being placed upon the school building due to changes in curriculum, and changes in method and organization all seem to us to point to the fact that we needed a change in the way buildings were designed and constructed.

Now there have been many people who have attempted to tackle this problem in many different ways. One of these, of course, is the prefabricated building. Pre-fabricated buildings have been with us for a long time. Nobody has really thought that this had a great deal to offer to some people, but still it was one answer to the problem.

We also had periods where people thought that perhaps stock plans were the answer. As you recall, the state of New York sponsored a big program with some leading architects in which stock plans were presented to educators in the state of New York, and to my knowledge, very little use has been made of these plans for a number of reasons. So all of these problems seem to demand a new look and a new way of doing things which we hope to accomplish in this project.

EFL was approached with the idea of developing a component system which would offer the advantages that have been mentioned before. Ezra Ehrenkrantz, our project architect, was a prime mover in this, and by 1961 we received an initial grant from EFL to do a study to see if this project was really feasible. How do you go about determining whether a project is reasonable and has a chance of achieving some of the objectives that you have for it? First of all, we thought that one of the ways to do this was to find a school district that we could get to very easily, and one that would have a growth market for high schools since we had agreed to concentrate on high schools initially. We also wanted an area with a sufficient market which would attract industry to do the kind of development work we thought necessary.

It just so happened that we had done a lot of work for a high school district near the Stanford Campus down below San Jose which had a tremendous growth potential and was planning to build some 18 or 20 high schools within the next ten to fifteen years. This seemed to us the logical place to start. It had a very forward looking board and superintendent who were amenable to listening to us to see what we had to offer.

Initially then, this was the scope of our project. It was going to be a nice tidy little project within one school district near the Stanford Campus, and we had just a few people involved.

During our feasibility study it became apparent that the type and size of market we were talking about with perhaps three high schools was just not sufficient to provoke industry to do the kind of research and development necessary to bring forth new products which would be specifically designed for school buildings. It became apparent that we would have to have at least 25 to 30 million dollars worth of school construction during a very short period of time of two years in order to get this accomplished.

There went our nice tidy little project, because it was obvious we could not generate that kind of volume out of one school district. We then had to do about four things according to our feasibility study.

DIRECTIONS FROM THE FEASIBILITY STUDY

First, we had to develop new products for the school market. Secondly, we had to encourage manufacturers of different projects to work together to get their products to fit into a cohesive system, and if you have ever worked with manufacturers who make different kinds of products in the building field, you know that they don't speak to each other very often. And thirdly, we had to get a sufficiently large market for the products and guarantee that market. No one is going to put thousands and thousands of dollars into developing a product unless they know that when they have finished it, they are going to have a place to put it. Finally, we had to find a satisfactory way to bring the product, the producer, and the consumer together.

During this time we had a very small staff, and it became apparent that in order to do these kinds of things, we would have to recruit a much larger staff and expand the project considerably.

Now when you recruit a staff for a project of this kind it becomes an interesting problem. What kind of staff do you get? One of the things we thought important was that we get young men of considerable talent, who did not have preconceived ideas about architecture, the building game, and schools in general. We established an advisory committee of very distinguished people which included architects and educators, and then recruited from these people members of their particular staffs whom they felt could make a sufficient contribution to the project. We took, for example, people like John Lyon Reed, an architect from San Francisco, who many of you know has done some very constructive things in school buildings. We asked John if he would give us a member of his staff to work with us for two or three years at which time we promised we would return him very well qualified in this particular area. I don't know if John really believed that we intended to give him back, but he was sufficiently convinced that the idea was a good one to give us one of his young fellows to work with us.

One of the other members of our advisory committee was Charles Lawrence of Caudill, Rowlett and Scott, and Bill Caudill of that firm lent us one of his young men to come and work with us. Cal Porter, an architect from San Jose, gave us a man.

Now we had all these young fellows, who had a lot of potential in the field, with people we put together as an architectural staff to run the project. The only educator on the staff at that particular time, in addition to myself, was Jim Lawrence, so we were kind of surrounded by architect types and had to fight for our own point of view during the project. Having determined then that we needed to expand the market, we decided to look around California. Because we wanted to avoid as many problems as possible, we decided not to expand into other states due to various jurisdictional problems that would compound the problems still further.

So having once decided to expand the project into California, we had to look around for school districts that: (a) had a construction program that called for completion in 1966 and 1967; and (b) had school boards of sufficient vision. They also probably had to be a little crazy to buy our idea, because at this particular point we did not have one single product, and we did not have the criteria upon which these products would be developed. All we had was an idea to sell, and through the help of people like Francis Darby, and Charlie Gibson and others, who helped put us in touch with various people, we were able to find thirteen school districts in California willing to go along with our ideas.

Well finding them is one thing, and putting them together into an organization that has legal status and can operate is something else again. One of the difficulties of the problem is that so many people are involved. In California for example, we had nine counties represented in this project. Each of these counties has a county council (legal advisor), and in California the word of the county council is law as far as the school district is concerned. Now the county councils don't always agree on what's legal, proper and right between various counties, so we spent a great deal of time with all of these people to get our legal procedures approved. Well, if it is hard to get school board members to agree on something, it's even worse to get lawyers to do so.

Eventually we did manage to get approval of our documents and formed what is known as The First California Commission on School Construction Systems organized under the joint powers agreement in the state of California which allows school districts to combine to do anything together that they cannot do separately. The governing body of this organization is five school superintendents selected from the thirteen, and they act like a school board. This in itself is rather interesting I think, because these people find themselves in an unfamiliar role of having the shoe on the other foot. We act rather as a staff for them, and it is a unique experience for all of us.

Once having established the legal mechanism, we had the problem then of going on to determine what the user wanted. Since we had nothing designed and no preconceived ideas of what ought to be designed, we had to find out from the school districts what they felt they wanted. To develop educational specifications for a school useful for thirteen school districts, each having different programs and different ideas about what they want to do is a rigorous and very taxing job.

When we went out to these school districts, we talked with the curriculum people and tried to find out just what it was they intended to do with their buildings, what they expected the changes would be, what kind of a plan they envisioned for these schools, and what the future held. We then took all this information and tried to put it together into a composite specification. This was of course a general document, as it included all that everybody thought they wanted to do. We sent this composite back to them and asked each to include his thoughts and objectives in it. Finally with a number of changes, we came up with a composite that was as close as we could come to what they expected to do.

Now the problem became one of how to do something once you know what someone wants done. Our answer to that was to develop performance specifications based on what it was the districts wanted to do. However, it soon became apparent that these people were not at all sure what they *really* did want to do! The only constant we had was change, that is, many seemed to know what they wanted immediately, and they knew also that this wasn't what they wanted two or three years from now. But they really didn't know what it was they actually believed they would want two or three years hence.

WORKABLE FLEXIBILITY

How do you design something based on that kind of a philosophy? We have heard a lot about flexibility, and it means many things to many people, but I think it was the key word for us in determining what it was we ought to be doing in designing a system. It meant to us that people had to have interiors that could readily be changed; that you did not end up with a post right in front of someone when you rearranged your building; that you could do it at a low cost; that the environmental conditions under which you operated were proper when you did change; and that you could change inexpensively.

This approach suggested to us that we ought to work in four main categories: structure, heating-ventilating-air conditioning, lighting, and ceiling and partitions. A year later we added two additional categories at the request of the school districts: cabinet work and lockers.

After we determined our basic components we had to develop performance criteria for each of these based on the educational requirements. I do not know how many of you have ever tried to develop performance criteria without dictating the product, but it is very, very difficult. Many times our staff had to be jerked back because they were trying to design a product, when the idea was to let industry take the problem and solve it the best way they could. We made a number of mock-ups suggesting ideas to industry and found that many times we'd get back our ideas almost identical to what we had done.

Since this was not what we wanted, we went through a very trying stage. We went through many, many drafts; the performance specifications had to go out to all the architects and engineers on the various school projects; they had to go to all of the manufacturers for their suggestions and comments. Again this involved much travel. We are located, as you know, in California, and a great majority of the manufacturers were in the east and midwest which involved our going to the east and midwest for days and even weeks.

THE PROCESSES OF BIDDING

These performance specifications then became the basis upon which an industry was asked to bid. The market was made up of the 22 schools to be built during this period of time, and the school districts had earlier agreed to use these products exclusively in the schools designed by their own architects. We sent them out to bid, and asked that each manufacturer who was going to submit a bid, give us a bid submission early enough that we could evaluate it, make comments on it, and send it back to them before he had to put in his final bid. I think this was one of the most valuable parts of this procedure in that it did give us an opportunity to put manufacturers who had similar interests and problems in touch with each other. All these bids were confidential, and we did not reveal the contents of any submission to any other manufacturer. We did put people in touch with each other who might profitably work together. The reasoning behind this is based on the fact that bids for these systems and sub-systems had to be compatible with each other, which in turn meant that the manufacturers had to talk to each other and had to get together prior to the bidding time.

We did have a lot of people who were afraid the government might look askance at their getting together with others, but we did find many who were not afraid to go ahead with the project. The bids came in during December. Prior to this, we had established what we considered reasonable target costs, based on the cost of schools built in California during the previous year. The bids were, we felt, below our target costs and were accepted on the basis on being the lowest, yet most compatible. In other words, if one particular element of a sub-system subsidized another, and yet the total package of structure, heating, ventilating and even air conditioning, lighting, ceiling, was lower because of some of the ways they worked together, this was the one we accepted.

Having once determined who the successful bidders were, and we did have a long list of bidders in each category, even though we were afraid we might not get any bidders at all (they were required to provide a price at one particular time for installation on the job two years hence), we next moved to the development phase. The only provision for escalation we allowed was six per cent, so they had a terrific job trying to figure out what their cost would be a couple years later on the job site.

THE DEVELOPMENT PHASE

These products were not fully developed when we received the bids. This is the stage in which we assured compatibility between the sub-systems by developing a number of tests; for example, a mock-up building was constructed in Milwaukee by England Steel Testing Structural System, another was constructed in Los Angeles to load test the building. The other manufacturers also did tests in their factories. We constructed a mock-up building on the Stanford Campus for the final checks, such as the environmental testing that went on to be sure that all of the products met the requirements as set forth in the bidding documents.

This has all been completed. The last phase was providing the architects with this information in a form that they could incorporate into the designs of their individual buildings.

INDIVIDUAL PROJECTS

We have now reached the stage where we are in the design by individual architects, and we are in the pre-bidding and bidding stages on all of the products. We have gone back to each district to attend pre-bid conferences with the people who are going to bid the job, to explain the systems to them so that there will be no misunderstanding on the part of contractors as to their roles.

We have now accepted bids on three projects: a 230,000 square foot high school for Fountain Valley, Huntington Beach, California; a 103,000 sq. ft. first increment of a high school in Placentia, California; and a high school of some 198,000 square feet in Fullerton. The contractors are on the job, and the projects are just about on schedule so far.

SUMMARY

We think we have achieved an improved quality and flexibility of the buildings as a result of using this particular system. In some cases total costs have been less than expected, although this was not necessarily our major objective. Generally though, the savings were plowed back into the building in other areas that needed up-grading so that we have, we think, a much better school—a school that will be cheaper in the long run, contain what we want it to have, and provide a longer, useful life.

We still have a number of things to do. Of course, these projects still must be evaluated over a period of time as to how well they do operate as school buildings. We still have some eighteen buildings to construct. We have to go through the design and bidding stage on each of these. We are hard at work trying to promote other systems for competition. We are also trying to develop other kinds of systems, because this system was developed specifically for these thirteen school districts to meet California requirements. There is a study group in Pennsylvania doing a feasibility study to see what this has to offer for them. There are others in New York, Massachusetts, and Canada. So this project seems to be going forward, and people are becoming more interested in it, and studying the effects of what it promises for them in their particular situation. I don't claim that what we are doing is the ultimate answer, but I think it is a very promising beginning in getting industrialization into the building field to develop proper products for the school market.

Mr. Boice also presented slides to illustrate some of the points he had discussed earlier.

1965 SCHOOL OF THE YEAR

The Valley Winds Elementary School in St. Louis County, Missouri, was named "1965 School of the Year" by the committee.

Accepting a plaque commemorating the award were Dr. Bruce Boggs, acting superintendent and Mrs. Mary Crafton, board member, representing the School District of Riverview Gardens, St. Louis. Also receiving a plaque was John A. Shaver representing the architectural firm of Shaver & Company, Salinas, Kansas, that designed the school. The presentations were made at the N.C.S.C. Thursday banquet session by Aaron Cohodes, editor of *The Nation's Schools,* and chairman of the committee.

The Valley Winds School was cited for excellence in architectural design, functional planning, satisfactory environment, economy of construction and operating, and proper provisions for the educational needs of the community, Cohodes explained.

Valley Winds, a K-6 school with a capacity of 660, has been called the "snail school" because of its unusual caracole shape consisting of three spirals. The air-conditioned building has no corridors, and wedgeshaped teaching suites are separated by movable dividers.

At the core of the school is a teachers' planning area surrounded by a resource and materials center that combines library, science and individual study areas.

Earlier this year, Valley Winds was selected as a School of the Month by the N.C.S.C. committee.

1965 NATIONAL COUNCIL OF SCHOOLHOUSE CONSTRUCTION SCHOOL BUILDING ARCHITECTURAL EXHIBIT

G. W. REIDA, GENERAL CHAIRMAN

The schools for the FIRST ANNUAL NCSC SCHOOL BUILDING ARCHITECTURAL EXHIBIT were selected by five committees composed of three or more council members from each of the five geographical regions. Chairmen for the five regional committees were:

Shirley Cooper	New England and Eastern Canada Region
Leo E. Buehring	North Central Region
Guy O. Tollerud	Prairie States Region
Charles E. Chick	Southern Region
C. G. Gibson	Western Region

SCHOOLS EXHIBITED BY REGION INCLUDED:

NEW ENGLAND AND EASTERN CANADA REGION

Walter J. Mitchell Elementary School
La Plata, Maryland
Earle S. Harder & Associates

Governor Thomas Johnson High School
Frederick, Maryland
Henry Powell Hopkins & Associates

John F. Kennedy High School
Wheaton, Maryland
Johannes and Murray & Associates

Gwynedd Mercy College Academic Center
Montgomery County, Pennsylvania
Nolen, Swinburne and Associates

Campus Elementary School
Union, New Jersey
Scrimenti, Swackhamer & Perantoni

East Elementary School
New Canaan, Connecticut
Sherwood, Mills and Smith, Architects

Collington Square Elementary School
Baltimore, Maryland
Smeallie, Orrick and Janka, Architects

Prince George's Community College
Largo, Maryland
Walton and Madden, Architects

Candlewood Junior High School
Half Hollow Hills, New York
Frederick P. Wiedersum Associates

NORTH CENTRAL REGION

T. C. Abbot Elementary School
Ann Arbor Public Schools
Ann Arbor, Michigan
The Perkins & Will Partnership, Architects

Barrington Middle School
Barrington Public Schools
Barrington, Illinois
Cone and Dornbusch, Architects

Mayfield Senior High School
Mayfield Heights, Ohio
Mayfield City School District, Cleveland
Ward and Schneider, Architects

Paul V. Sangren Hall
School of Education
Western Michigan University
Kalamazoo, Michigan
Louis C. Kingscott & Associates, Architects

PRAIRIE STATES REGION

Jefferson Junior College
Jefferson County
Hillsboro, Missouri
Pearce and Pearce, Inc., Architects

Instructional Planning Center
Sioux Falls, South Dakota
Fritzel-Kroeger-Griffin and Berg, Architects

Mayo High School
Rochester, Minnesota
Haarstick-Lundgren and Associates, Inc.

Warren G. Harding Junior High School
Cedar Rapids, Iowa
Kohlman-Eckman-Hukill, Architects

Hawthorn School
Cape Girardeau, Missouri
Boardman and Phillips Architects, Inc.

SOUTHERN REGION

Washington Park Elementary School
Manatee County Board of Public Instruction
Bradenton, Florida
Louis F. Schneider, AIA

South Salem Elementary School
Roanoke County School Board
Roanoke, Virginia
Guerrant & Mounfield, Architects

Lexington Middle School
Lexington City Board of Education
Lexington, North Carolina
Six Associates, Inc.
Architects and Engineers

Benjamin Syms Junior High School
Hampton City School Board
Hampton, Virginia
Oliver and Smith, Architects

Clarksville Senior High School
Clarksville-Montgomery County School Board
Clarksville, Tennessee
Shaver & Company, Architects

Edison Junior College
Lee County Board of Public Instruction
Ft. Myers, Florida
McBride and Frizzell, Architects

WESTERN REGION

El Dorado High School
Placentia, California
Clifford G. Riddlebarger, Superintendent
William E. Blurock & Associates, Architects

Fairmont Elementary School
Pacificia, California
Fred E. Lucas, Superintendent
Masten & Hurd, Inc., Architects

Highline College
Seattle, Washington
Carl Jensen, Superintendent
Ralph H. Burkhard, Architect

Holly Jr.—Sr. High School
Prowers School District RE-3
Holly, Colorado
Gordon Pekarek, Superintendent
Nixon & Jones, Architect

Inglemoor Senior High School
Bothell, Washington
Julian Karp, Superintendent
Hovind, Harthorne & Smith, Architects

Laura Hansen Elementary School
Cupertino, California
Dr. Charles Knight, Superintendent
Dean Price, Architect

Mission San Jose High School
Fremont, California
Dr. William J. Bolt, Superintendent
Falk & Booth, Architects

EXECUTIVE SESSION— BUSINESS MEETING

MINUTES OF ANNUAL MEETING

ANNUAL REPORT OF THE SECRETARY-TREASURER

ANNUAL FINANCIAL REPORT

REPORT OF THE AUDITING COMMITTEE

BOARD OF DIRECTORS REPORT

REVISED POLICY GUIDE—
SCHOOL FALLOUT SHELTERS

MINUTES OF ANNUAL MEETING OF THE MEMBERS OF THE NATIONAL COUNCIL ON SCHOOLHOUSE CONSTRUCTION

The annual meeting of the members of the National Council on Schoolhouse Construction was held at Lincoln, Nebraska, on October 5, 1965.

On motion duly made, seconded and unanimously carried, Francis C. Canada were present, constituting approximately 30 per cent of the membership as defined by the Council before incorporation.

On motion duly made, seconded and unanimously carried, Francis C. Darby was elected Chairman of the meeting and Floyd G. Parker, Secretary thereof.

The following reports were submitted and approved: the Secretary's report, the financial report, the audit report, the Board of Director's report.

The proposed bylaws were presented to the members, studied and discussed. Upon motion duly made by Wilfred F. Clapp, seconded by Charles Gibson and unanimously carried, it was

RESOLVED, that the proposed bylaws, excepting the provisions pertaining to Membership section "C" and resultant fees applicable to those considered in this section, be adopted as the bylaws of the corporation with the understanding that the Secretary is empowered at any time to make revisions advised by legal counsel or other advisors in order to conform such bylaws to requirements of the laws of the State of Michigan or Section 501 of the Internal Revenue Code, so long as such revisions do not change the general meaning or intention of the membership as expressed therein.

Upon motion duly made by C. W. McGuffey, seconded by Dwayne Gardner and carried by a vote of 94 to 22, the provisions in question on membership and dues were adopted as bylaws of the corporation with the same understanding as to revision as previously indicated.

After motion duly made, seconded and unanimously carried, it was

RESOLVED, that A. L. Beck be elected President of the corporation for the ensuing year;

RESOLVED FURTHER, that John A. Cameron be elected President-Elect and Director of the Corporation for the ensuing year, and

RESOLVED FURTHER, that Robert Guild be elected a Director for the ensuing three year term.

RESOLVED FURTHER, that the term of Cleve O. Westby and Merle Stoneman be ended.

RESOLVED FURTHER, that the term of Frank E. Irwin be extended two years, and the term of Richard F. Tonigan be extended one year to conform to the corporation bylaws.

A revised policy statement on Fallout Shelters was presented by Chairman Charles Gibson of the Ad Hoc Committee on Fallout Shelters. Upon motion made by Charles Gibson and seconded by George Englehart, and unanimously carried, it was

RESOLVED that the revised policy statement be accepted by the Council.

It was announced by the Secretary that the next annual meeting will be held in Palo Alto, California from October 3-6, 1966.

There being no further business, the meeting thereupon was adjourned.

ANNUAL REPORT OF THE SECRETARY-TREASURER

Highlights from the Secretary's oral report:

First of all, I want to give due credit to three young men who are spending most of their time behind the scenes during the convention. Karl Dubois is the National Council Graduate Assistant provided for me by Michigan State University. The second gentlemen is Rex Englebretson who is aiding Dr. Merle Stoneman. Harold Rowe, not here at the moment, is Dr. Stoneman's graduate assistant. So we have three young fellows teamed up here to do the slave jobs, and they are doing it well.

Especially for the benefit of new members, last year we printed a directory for the first time. We are planning to print a directory again this year which will list all members by provinces or states. The directory also contains a brief history and philosophy of the Council. Each new member should receive a current copy. If you have not received your 1965 copy within a reasonable period of time, be sure and let our office know.

The second item which is important to all of us is the Annual Proceedings. This brings to you, in capsule form, the proceedings from each of the annual meetings and also contains the minutes of the Board of Director meetings throughout the year. The proceedings last year were copyrighted for the first time. All members receive one free copy; additional copies cost $2.50 each.

The NCSC Guide is continuing to sell. We are now distributing our second reprint. It is going so well that I am sure the Board of Directors and the Publications Committee should concern themselves with the possibility of a third reprint.

Another item which has particular interest for the new members is the Newsletter. We have issued this four times a year in the past, and in all probability will need to send out the Newsletter every four to six weeks in the future. I would appreciate very much having each and every member contribute to this publication; send in anything which you think might be of value to the Council.

A year ago I mentioned that we made application for a seat in the U. S. Commission of UNESCO. This is in the process of action at the present time. We have received an invitation to send a delegate to their next meeting in Kansas City in November, 1965.

The following members are now eligible for life membership: Paul Keith, A. D. Dotter, Elmer Deering, J. L. Taylor, Alfred Davis, and Bill Clapp. I am sorry to report three deaths in our membership: Ed Braun, Francis Scherer, and Thomas J. Higgins. All three men were former NCSC presidents and made significant contributions to this organization. Three persons have asked for termination of membership: Alex Taylor, Melvin Davis, and Frank Mullis.

At this point, we have but five members who are more than two years delinquent in their dues.

At the latest count, my records indicate that we have seventy-three new members this year and one re-instatement. This makes a total membership in the Council of 438 members.

NATIONAL COUNCIL ON SCHOOLHOUSE CONSTRUCTION
ANNUAL FINANCIAL REPORT

September 1, 1964 to August 31, 1965

RECEIPTS

Actual Bank Balance September 1, 1964	$ 2,424.47	
Actual Balance of University Account	5,723.35	
Membership Dues	2,840.00	
Sale of Publications	17,251.17	
Refund on NEA Exhibit Booth	50.00	
EFL Reimbursement	2,829.07	
Transferred from Savings Account	4,000.00	
Total Receipts		$35,118.06

DISBURSEMENTS

Convention Expense	$ 277.50		
Printing and Editing Proceedings	1,764.45		
Expense on 1964 Guide	10,064.98		
Publication of Newsletter	481.14		
Committee Expense	1,219.95		
EFL Committee Expense	2,829.07		
Office Secretary	3,336.74		
Office Supplies, Postage, Etc.	1,581.15		
Supplies and Services	133.44		
Printing	694.75		
Refunds on Publications	135.00		
NEA Exhibit Deposit	50.00		
Discounts on Canadian Checks	3.50		
Transfers to Savings Account	8,500.00		
Miscellaneous	19.95		
Total Disbursements		$31,041.62	
			$ 4,076.44
First National Bank of East Lansing	$ 4,051.92		
Checks Outstanding	34.15		
		$ 4,017.77	
University Account #31-3881		58.67	
			$ 4,076.44

ACCOUNTS RECEIVABLE

Publications

Guide for Planning School Plants, 1964 Edition	313 @	$6.00	$ 1,878.00	
Guide for Planning School Plants, 1958 Edition	2 @	3.00	6.00	
	3 @	4.00	12.00	
Thirteen Principles of Economy	16 @	1.00	16.00	
Elementary School Plant Planning	26 @	1.00	26.00	
Planning Facilities for Higher Education	14 @	1.50	21.00	
Proceedings	50 @	2.50	125.00	
	6 @	1.00	6.00	
American Standard Guide for School Lighting	3 @	.50	1.50	
			$2,091.50	
Partial Payment Due			1.00	
Total Publications Receivable				$ 2,092.50
Dues				
Total Dues Receivable				810.00
Total Accounts Receivable				$ 2,902.50

PUBLICATIONS SUMMARY

	Inventory August 31, 1964	Copies Sold	Free Copies	Inventory August 31, 1965
Guide for Planning School Plants, 1964 Edition	1,228	3,176	57	2,120
Guide for Planning School Plants, 1958 Edition	20	26	0	8
Thirteen Principles of Economy	391	205	21	168
Elementary School Plant Planning	227	194	22	13
Planning Facilities for Higher Education	2,009	150	25	1,835
Proceedings 1963	238	122	45	73
Proceedings 1964	0	76	460	218
American Standard Guide for School Lighting	87	41	19	28

FINANCIAL CONDITION, August 31, 1965

Actual Bank Balance				$ 4,017.77	
University Account #31-3881				58.67	
					$ 4,076.44
Accounts Receivable					2,902.50
Savings Account					5,314.13
Publications Inventory					
Guide for Planning School Plants	2,120	@	$6.00	$12,720.00	
Thirteen Principles of Economy	168	@	1.00	168.00	
Elementary School Plant Planning	13	@	1.00	13.00	
Planning Facilities for Higher Education	1,835	@	1.50	2,752.50	
Proceedings	291	@	2.50	727.50	
American Standard Guide for School Lighting	28	@	.50	14.00	
					16,395.00
Total Resources					$28,688.07

NATIONAL COUNCIL ON SCHOOLHOUSE CONSTRUCTION AUDIT CERTIFICATION

The Auditing Committee, appointed by Francis C. Darby, President of the National Council on Schoolhouse Construction, met in East Lansing, Michigan at 9:00 A.M. on September 21, 1965. On this date the books and official records of the Secretary-Treasurer were audited as follows:

1) The general checking account balance at the First National Bank of East Lansing on August 31, 1965 was *$4,051.92* as verified by bank statement and personal letter from the bank. The checking account balance as of August 31, 1964 was *$2,424.47* plus deposits of *$26,964.24,* less cancelled checks totaling *$25,336.79* and outstanding checks in the amount of *$34.15,* leaves a balance of *$4,017.77* in this account. This corresponds with the balance of receipts and disbursements shown on the official books of the Secretary-Treasurer.

2) The University Account balance at Michigan State University on August 31, 1965 was *$58.67* as verified by the ledger sheets from the University Business Office. The ledger records a total deposits of *$18,529.35* subtracting the total disbursements of *$18,470.68* leaves a balance of *$58.67* in this account. This corresponds with the balance of the deposits and disbursements shown in the official books of the Secretary-Treasurer.

3) Savings Account Certificate #7791 with the First National Bank of East Lansing indicates a balance of *$686.50* as of September 1, 1964. The passbook records a total deposits of *$8,500.00*. The September 1, 1964 balance plus total deposits equal *$9,186.50*. *$4,000.00* was withdrawn to be transferred into the checking account making the balance of this account *$5,186.50* before the accumulated interest. Interest accumulated for the period, September 1, 1964 to September 1, 1965 is *$127.63* thus *$5,314.13* in the savings account on deposit at the First National Bank of East Lansing. This was verified by personal letter from the bank.

4) We have found all disbursements to be made by check or through the University Account and all accounts to be in proper order.

5) Recommendations for further improvement of the Secretary-Treasurer's books and accounts are as follows:

A) That an intensive effort be made to collect accounts receivable of more than two months standing.

B) That if the operations of the Council expand as proposed, a commercial firm of auditors be employed to audit accounts annually and advise regarding fiscal operations and procedures.

It was found that the recommendations made by the Auditing Committee in 1964 have been put into effect.

Signed:

Harold W. Boles	9/21/65
F. Ralph Frostic	9/21/65

NATIONAL COUNCIL ON SCHOOLHOUSE CONSTRUCTION REVISED POLICY GUIDE STATEMENT RELATIVE TO SCHOOL FALLOUT SHELTERS

LINCOLN, NEBRASKA

October 5, 1965

At its Denver, Colorado, meeting in October 1962, the National Council on Schoolhouse Construction approved a policy statement on school fallout shelters which state, "The Council's position is that shelter provisions are not compatible with educational requirements and that shelter requirements interfere and conflict with defensive educational criteria, thus requiring the separation of school and shelter facilities." This was a well considered judgment based on the lack of consistency among experts as to what constituted adequate fallout protection. For example, the Office of Civil Defense protection factor then recommended had just been revised from 1000 to 100. This change of shelter design criteria was the result of continuing research and evaluation of nuclear test results by the Department of Defense, The Atomic Energy Commission, The Public Health Service and other Federal agencies. Since 1962 there has been further dramatic reduction in design criteria for fallout shelters based on continued research by the Office of Civil Defense and the desire to set realistic goals for shelter achievement. Time and new conclusions based on technical research suggest that the 1962 policy statement should be reconsidered.

Policy Guide for Shelter Planning Utilizing School Facilities

The position that shelter capability can be incorporated into a school plant design and be compatible with educational requirements is realistic only if solutions can be found that do not compromise the educational criteria of good school planning. While it is true that standards for school housing vary from state to state, most school planners recognize the obligation to design the facilities so that progressive development of the educational program can take place during the useful life of the school. This can be accomplished only by a deliberate use of the concept of flexibility. Equally important is the search by school planners for criteria which will humanize the school plant and provide psychological comfort. These goals may be considered as universal and should not be compromised to meet fallout shelter criteria. The radiation shielding requirement in the design of a new school building should be a program condition considered by the architect during the preliminary design stages. Shelter should be incorporated as a secondary use of space, subservient to the primary educational function and should not dictate the design of the school to the extent of adversely affecting usefulness or appearance.

The continuing search for compatible solutions to provide shelter capabilities without compromising school design has demonstrated that it is time to reorient our thinking. Any discussion of shelters and schools must differentiate and treat separately three situations:

(1) Emergency shelters constructed within minimal time;

(2) Shelter for existing school housing; and

(3) Shelter for new school housing.

A. *Emergency Shelters*

School sites should be available for shelter construction when shelters are separate from the school plant and they perform a *single function*—that of providing emergency shelter. Normally such construction would be dependent on a critical emergency situation implemented on a national basis when time is extremely limited. Such a solution would probably involve earth excavation and the installation of mass-produced shells either wholly or partially underground.

B. *Shelter for Existing Schools*

The Council supports and encourages a program for increasing the amount of shelter in existing schools found to contain insufficient spaces. The increase can take the form of the construction of dualuse added facilities. Such structures as indoor recreational facilities lend themselves well to consideration for this purpose. Whatever forms the solutions might take, the problem of what to do about existing schools, deficient in shelter, must be given proper consideration. Twenty years from now, more than 50% of all school children will be housed in buildings which are existing now.

C. *Shelter for New Construction*

The Council supports Office of Civil Defense programs for obtaining fallout shelter space where needed within a neighborhood or community through long-range planning. Such a program would include all types of buildings such as office buildings, churches, shopping centers, etc., as well as schools. New school buildings should be designed using techniques developed by the Office of Civil Defense to maximize fallout protection where this can be done without impairing the purpose of the building or its educational effectiveness.

D. *Lines of Communication*

The Council reaffirms its policy stand that federal relations with local public schools shall be channeled through the state education agency. Accordingly, any proposed federal participation in the provision of fallout shelters in schools should be within the established pattern of federal-state relationships and state coordination of local public education. Competent review by a state educational planning agency should be a requirement for any shelter program involving local schools.

E. *Shelter Financing*

Shelter capability theoretically can be added to a school plant with little or no compromise in the design of educational requirements, aesthetics or psychological environment, but it is unrealistic to believe that in general this can be done without affecting school costs. The Council believes that extra expenditures beyond the normal school construction cost levels to provide shelter capacity are non-educational and are not legitimate charges against school tax or capital outlay funds. The Council encourages a Federal subsidy for shelter construction up to that amount of money required for reimbursement of actual shelter costs to the school district for school plant modifications or additions when achieved in cooperation with the Office of Civil Defense.

Since schools are only one part of the total community facilities that should be made available for shelter purposes, the Council encourages a Federal program of fiscal support of shelter construction in all types of new buildings and modification of existing structures to make them serve the general shelter program.

The Council supports the position that no shelter program is adequate unless it provides protection for the total community.

Submitted by *Ad Hoc* Committee
National Council on Schoolhouse Construction

John Cameron

Clair Eatough, Technical Consultant

George Englehart

Charles Gibson, Chairman

W. D. McClurkin

John McGinnis

Edward Wilcox

Revised Policy adopted by a unanimous vote at Annual Meeting of National Council on Schoolhouse Construction held at Lincoln, Nebraska, October 5, 1965.

The motion to adopt this policy revision was made by Chairman Gibson. George Englehart seconded the motion. Motion carried.

STANDING COMMITTEE REPORTS

PUBLICATIONS

PROFESSIONAL ACTIVITIES

RESEARCH

RESOLUTIONS

REPORT OF THE PUBLICATIONS COMMITTEE

During the past year, your Publications Committee has devoted its time to three major responsibilities:

1. With the help of the Secretary-Treasurer's Office, we solicited from the membership and compiled minor editorial changes in the *Guide* in preparation for the second printing. Our Committee recommended that 5,000 copies be reprinted. The Executive Committee authorized 3,000. We now have on hand approximately 1,800 copies and sales are still going strong. We are recommending that a third printing be authorized when the number of copies on hand approaches 500. The Council has sold approximately 4,200 copies since the *Guide* was put on the market about one year ago.

2. During the summer our committee participated, along with the Executive Committee and other standing committees, in the study of the Council's status and future activities.

3. Our major effort both during the year and during our work here at this Conference has been to get committees appointed and working toward the revision of old publications and the preparation of new ones. This activity has consumed a great amount of time of many people. You will recall that we have four writing sub-committees working. The members of three of these committees met here two days ahead of the conference to work on their assignments. The Committee chairman and the current membership of these committees are as follows:

(1) Writing Sub-Committee on "Planning Facilities for Higher Education."

Chairman—Dr. Ross Neagley
Dr. William S. Fuller
Dr. Donald Walling
Dr. Richard DeRemer
Dr. Victor Randolph

(2) Writing Sub-Committee on the Revision of the "Secondary School Plant Planning" bulletin.

Chairman—Dr. W. O. Wilson
Mr. George Reida
Dr. Dwayne Gardner
Dr. Harold Cramer
Dr. Jet Pierce
Dr. Dave Hutcheson
Mr. Guy Tollerud

(3) Writing Sub-Committee on "Maintenance and Operation Factors in School Plant Planning."

Chairman—DR. KENNETH WIDDALL
MR. FELIX OSWALT
MR. G. G. BAILEY
DR. RALPH N. FINCHUM
MR. JOHN L'HOTE
MR. CLARENCE P. LEFLER
MR. DAVE SMALLING

(4) Writing Sub-Committee on "Planning Facilities for Vocational-Technical Education."

Chairman—DR. W. W. CHASE
MR. LESTER WELCH
DR. HAROLD SILVERTHORN
MR. ROBERT HULL
MR. WAYNE BETTS
MR. VERNON WYLAND

The Writing Committees are in various stages of completion of their assignments. The sub-committee on "Maintenance and Operation Factors . . ." has a working outline. The sub-committee on "Secondary School Plant Planning" has a full committee and a working outline. The sub-committee on "Planning Higher Education Facilities" also has a strong nucleus of members and has developed a working outline. We commend these sub-committees for showing excellent progress. All four committees have plans for meeting and working during the coming year. We expect that by the 1966 meeting that at least two sub-committees will have rough drafts available. We are recommending a budget for the support of the activities of these committees during the year.

The time has come for us to plan for another revision of the Council's *Guide for Planning School Plants.* The new revision should be available for distribution not later than 1969. Your Committee is in the process of developing plans for the preparation of the new edition.

C. W. MCGUFFEY, Chairman
ELVEN DUVALL
BASIL HICK
THOMAS GWYNN (absent)
BEN EVANS (absent)

REPORT OF THE PROFESSIONAL ACTIVITIES COMMITTEE

Considering the projects under way, the past twelve months have been an exciting period of time for the Professional Activities Committee. This report presents five projects which are in process. In order to service the proposals, the Committee met at Houston at the 1964 Annual Conference, at Atlantic City during the AASA Convention in February, at Denver for a special meeting in July, and, again, here at the Annual Conference in Lincoln.

PROJECT #1

It is the opinion of the Committee that one of the great needs of our school-planning organization is to place a greater emphasis on liaison with instructional personnel. Contacts involving correspondence and conferences have been made with ASCD, Classroom Teachers Association, Department of Rural Education, Department of Elementary School Principals, Department of Secondary School Principals, AASA, and AIA. The Committee has indicated to these organizations that it would be willing to work with them in setting sessions in their annual conferences which present opportunity for discussion in the area of school planning. Authorization has been obtained from our National Council Board of Directors to hold a breakfast at the AASA Convention, February 1966, so that representatives of the different groups may meet with our Committee to complete arrangements for the coming year. This is a project which should pay dividends and one that has been met with enthusiasm by all parties involved.

PROJECT #2

The Committee has proposed that six study seminars be held, with strategic locations throughout the United States to be identified. Participants in the seminars would be limited to thirty persons, twenty of whom would be National Council members, the other ten being consultants and participants from instructional fields. The Professional Activities Committee would assist with coordination of the events; it is felt, however, that the execution of the six seminars would require assistance of a professional staff which, it is hoped, will be authorized for the National Council. It is the intent that the seminars be held at institutions of higher learning, utilizing a contract procedure to secure facilities, program assistance, conference reports, etc. Budget estimates total approximately $15,000 for each seminar which would pay for all expenses of the activity and the participants. It is the opinion that it would be necessary to secure grants for the activity inasmuch as the National Council operating budget is not sufficient to cover the requirements. Six seminars have been proposed, however it is felt that a single pilot project should be carried out during the coming year with the other five to be implemented following evaluation of the first activity.

Areas for consideration would include psychological aspects of learning, programming for learning, environmental factors in learning. All areas would be examined in light of the implications for the school plant.

It is expected that the final proposal will be completed for consideration by the Board of Directors at their meeting in February, 1966.

PROJECT #3

A pilot project involving the review and indexing of published articles in periodicals is in process at the University of Montana, under the direction of Committee Member Jim Thrasher who is the Dean of their School of Education. The review will cover the year 1964. Information will be cross-indexed, and is being placed on computer cards for easy access. Once the project is complete, recommendations will be made for additional activities which will include proposals on making the information available for members of the Council.

PROJECT #4

Cooperating with the Publications Committee, our group will conduct a survey of the membership to obtain detailed information on the preparation, experience, and current assignments of Council members. This survey should be completed within the next sixty days. It will be appreciated if members of the Council will respond promptly and completely so that Council records may be established. This supplements the questionnaire completed by Dr. Ted Drake in connection with his dissertation approximately a year ago.

PROJECT #5

The Board of Directors has requested that the Professional Activities Committee coordinate the membership drive to secure no fewer than 200 additional members and no fewer than 200 consulting firm memberships. This project is subject to approval of the changes to the Bylaws which will permit the admission of consulting firms to membership. The Committee will work with state and province membership chairmen who will be appointed during the Annual Conference. It is our intent to complete the project by February 1966. Cooperation of Council members with the state and province membership chairmen will be appreciated and will materially aid in the entire program.

Our Professional Activities Committee has given careful consideration to the proposed Bylaw changes and wishes to go on record strongly endorsing the proposals including the authorization to extend membership to consulting firms, the enlargement of the Council, and the establishment of an executive secretary and professional staff to carry on the business of our Council. We also wish to commend President Darby and the Board of Directors for their horizon-pushing endeavors which, it is felt, will establish 1965 as a year of progress in the history of the Council.

M. TED DIXON, Chairman
RAY HAMON
HENRY RISSETTO
JAMES THRASHER
DONALD O. BUSH

REPORT OF THE RESEARCH COMMITTEE

During the second year of the Research Committee, which was established in December, 1963, the specific objectives described last October in the committee report have been the guide-lines for committee action. The following progress has been achieved to date:

(1) The Research Committee has continued its efforts to recognize research in the school plant field that has the characteristics of control and/or conclusion. Last year the committee published in the *Proceedings* (1964) an annotated bibliography of research related to schoolhouse construction, sites, and equipment since 1960. At the meeting this year, Dr. Thomas Jordan, a member of the Council, has furnished a supplement bringing this bibliography up-to-date.

(2) As a means of promoting interest in school facilities research, as well as of sharing information, the Research Committee has arranged the Fifth General Session of the annual meeting this year as an opportunity for presenting research papers in the school plant field.

(3) An accomplishment of long-range significance this year was the establishment on September 15, 1965, of the NCSC ABSTRACT SERVICE, funded by the U. S. Office of Education. The Research Committee has direction and supervision of the project. The purpose of this contract is to locate and abstract documents that describe research and development in the school plant field. Other aspects of the work are screening, obtaining, reviewing, and classifying the documents. The documents and abstracts (in a prescribed form) will be transmitted to the Education Research In-

formation Center in Washington, D.C. (ERIC). This center is a modern information storage and retrieval system, operated in the U. S. Office of Education.

It is significant that the National Council on Schoolhouse Construction was recognized as best equipped to provide the abstract service. About 30 school plant specialists in the National Council will serve as abstracters. The editing office is in charge of a project manager, Mrs. Pauline Oliver, located in the University of Houston.

(4) Among the advantages of the NCSC ABSTRACT SERVICE is that a copy of all abstracts, recognizing the names of reviewers, can be published in the National Council *Newsletter.*

(5) The Research Committee is preparing a proposal to the U. S. Office of Education for funding of an "NCSC Seminar in School Facilities Research." Experience has shown that background and skill are required to plan new research in the school plant field and a training program for this purpose is needed.

The Research Committee has held three meetings this year, in Atlantic City, Houston, and Lincoln. A part of their assignment has been to furnish the Executive Committee with proposals and plans for advancing the work of the National Council. The Research Committee has recommended a full time Research Director as part of the proposed Executive Secretary's office. The committee has strongly endorsed the idea of gradually making the *Newsletter* a technical journal, including necessary editorial work, since there is need in the school plant field for such a journal. The committee has also recommended that there be a funded project aimed at producing a cumulative series of school plant research reports.

A proposal for this research reporting project was developed by the Research Committee for future funding, which would include the other management and editorial suggestions. The committee has analyzed the *Guide* to identfiy ten specific topics for initial research. The proposal is to sub-contract specified research inquiries and report writing work to institutions represented in the National Council. The Research Committee and several sub-committees would advise on policies for the project, but the investigators would have professional leeway in designing and conducting the actual research. The proposed series of research reports would strengthen future issues of the *Guide* and by their cumulative effect, if continued over a period of years, would encourage more depth of research in the school plant field.

WALLACE H. STREVELL, Chairman
WILLIAM W. CHASE
ARTHUR E. WOHLERS
BASIL CASTALDI
WILLIAM O. WILSON

A REPORT OF THE RESOLUTIONS COMMITTEE

The Council membership at its 42nd meeting reaffirms its belief that the basic purpose of the Council is to improve education through improvement in the planning of educational facilities. In order to achieve this purpose the Council shall engage in the following professional activities: The exchange of emerging ideas and promising practices in educational facilities planning; the identification, completion, and diffusion of needed research; publication and dissemination of current and emerging concepts and practices in the planning of educational facilities; the improvement of training programs for educational planning specialists in colleges and universities; the strengthening of planning services in local districts, intermediate units, provinces, state departments, federal agencies, and higher education institutions; the promotion of coordinated long-range planning by affected governmental and private planning agencies; and the promotion of economy in the design and construction of educational facilities. The Council is concerned with pre-schools, elementary and secondary schools, and higher educational institutions, both private and public.

The Council pledges its knowledge and energies in working cooperatively with representatives of industry, architecture, and of political, social, and other agencies to promote the preceding pledge.

The Council wishes to affirm to the Commissioner of Education its great debt to the School Housing Section of the U. S. Office of Education and to urge the re-establishment of this vital unit. The School Housing Section has for many years, provided both leadership and services in the important field of school facilities planning. It has provided publications of proven worth on the principles of sound educational facilities planning and construction as well as valuable interpretation of statistical data.

The members of the Council feel that the loss of both his leadership and these services will have harmful effects from the smallest school district to the largest metropolitan district and from the smallest private college to the largest state university.

It is urged that this leadership and these services, now of greatly increased importance when greater and greater sums are being expanded for educational facilities, will continue to be provided by an appropriate unit, in the U. S. Office of Education.

The Council commends the Educational Facilities Laboratories, Inc., and its president, Dr. Harold B. Gores, for its recognition of the National Council on Schoolhouse Construction as an organization of international scope and influence which can contribute significantly to the building of better educational facilities. The Council is sincerely appreciative of a fifteen thousand dollar grant from Educational Facilities Laboratories which has made possible the undertaking of a self-evaluation study. This study has as its objective the expanding and revitalizing of the organization of the National Council.

The Council commends President Darby, the Board of Directors, and the Chairmen of the Research, Publication, Professional Activities, and Future Activities Committees for their diligent efforts in the undertaking of an evaluation study of Council organization, communication, and operation. The Recommendations contained in the report to the membership at the 1965 annual meeting are excellent. They should be highly significant in providing an operational framework which will permit the Council to provide dynamic leadership in the field of educational facilities planning.

The Council urges its membership to consider, at its 1966 meeting, a revision of the Bylaws to provide a Board of Directors consisting of seven members, four elected at large from the membership of the Council plus three who are the chairmen of the three standing committees provided for in the Bylaws. The Executive Secretary should serve as secretary to the Board of Directors. The Board of Directors should carry on the business of the Council and approve the establishment of such committees as may be required to assist the President in carrying out his executive duties.

The Council commends the Board of Directors for initiating measures to establish an annual School Building Architectural Exhibit. Special recognition is given to General Chairman, G. W. Reida, and the five regional chairmen, Shirley Cooper, Leo E. Buehring, Guy O. Tollerud, Charles E. Chick, and Charles D. Gibson, for their excellent pioneering effort in developing and presenting the First Annual School Building Architectural Exhibit to the 1965 meeting. Expanded development of the N.C.S.C. exhibit concept is urged.

The Council re-affirms its support of the use of the Scissors Curve, as explained in the Guide for Planning School Plants, as one of the screening criteria used in the selection of light sources for school and college design. The Council would urge the Illuminating Engineering Society and the American Institute of Architects as co-sponsors of the most recent edition of the American Standards Association Guide for School Lighting to continue to support the Scissors Curve as a light source screening device until such time as agreement is reached among the representatives of the three co-sponsoring organizations on the appropriateness and application practicability of any new proposed method for evaluating direct glare as an element of school and college building design.

The Council members express sincere gratitude and appreciation to the local arrangement committee composed of Merle A. Stoneman, David W. Hutcheson, Melvin Boehr, Harold Koch, Harold Rowe, and Rex Engebretson, who provided complete and highly satisfactory facilities for this Council, including tours of local school designed to meet the challenge of today's educational needs.

The Council extends its gratitude to Mrs. Merle A. Stoneman and Mrs. David W. Hutcheson for their planning that provided good fellowship and entertainment for our wives while the Council was in session in Lincoln, Nebraska.

Special recognition is given by the Council to President Francis C. Darby, President-Elect A. L. Beck, and Secretary-Treasurer Floyd C. Parker, and to the Executive Committee, Cleve O. Westby, Richard F. Tonigan, Frank Irwin, and Merle Stoneman, for the arduous task of planning, and implementing a program of this magnitude and range.

To all other participants who so successfully executed this program the Council extends its thankfulness for their help for the 42nd meeting of the Council.

The Council regrets with profound sorrow the loss of E. J. Braun, Assistant Superintendent, Arlington, Virginia; Francis R. Scherer who previous to his retirement in 1963, was architect and superintendent of school buildings, South Rochester, New York; and Thomas J. Higgins, Director, Bureau of Buildings Surveys, Chicago Public Schools.

Respectfully submitted

G. W. REIDA, Chairman
DONALD L. DAVIS
CHARLES WELLS, JR.
JAMES E. GARLAND
WILLIAM L. STORMER
LELAND STANFORD

On motion by C. W. McGuffey, seconded by James Schooler, the report of the resolutions committee was adopted.

SCHOOL OF THE MONTH COMMITTEE REPORT

During a meeting held in Lincoln, the following suggestions were made by committee members:

To ensure coverage beyond the states represented on the committee,

committee members should write letters to appropriate school planning officials in every state in their region requesting the names of outstanding elementary and secondary schools to consider as school-of-the-month candidates.

Several members at the meeting, notably Tollerud and Wohlers, indicated they were developing special evaluative forms to screen candidates. Any members preparing such forms, were urged to send them to the acting chairman in Chicago so that they could be duplicated and distributed to all members. Regional committee chairmen should assign and coordinate the letters within their region to avoid duplication.

Suggested deadline for sending these letters was stated as being January 10, 1966.

It was agreed that an additional criterion which should be used in considering candidates is the publicity already given to the school. If a school has been published in a national journal or in a booklet given wide distribution by an architectural firm or an educational organization, this factor should weigh against the selection of the school by the committee—although it should not necessarily rule such schools out of consideration.

Comment: Purpose of this suggestion was to emphasize that the objective of the school of the month program is to call attention to good schools that might otherwise pass relatively unnoticed, rather than to continue to publicize only a small number of schools.

The members were urged by Secretary Parker and President Beck, among others, to consider carefully the educational program of a school and relate it to the construction program in the selection process.

It was noted that because the State School Director's Council meets shortly before the NCSC 1966 meeting, it was suggested that Charles Gibson query those officials as to schools in their states that seemed noteworthy.

Members were reminded to point out any unusual or well-done *parts* of schools that might not qualify *in toto* as schools of the month.

The purpose of noting parts of schools, or unusual design treatments, would be to enable the committee to put some of these components together into a special report.

The following schools, all nominated by committee members, were presented to the committee for acceptance as schools-of-the-month:

Edwin J. Cooper Senior High School, Robinsdale, Minnesota
Architects: Bissell, Belair & Green, Minneapolis

Edison Junior College, Ft. Myers, Florida
Architects: The Perkins & Will Partnership, Chicago, in association with McBryde & Frizzell, Ft. Myers, Florida

Newark State College Elementary Laboratory School, Union, N.J.
Architects: Scrimenti, Swackhamer & Perantoni, Somerville, N.J.

John F. Reagan High School, Austin, Texas
Architects: Page, Sutherland & Page, Austin, Texas

Mission San Jose High School, Fremont, California
Architects: Falk & Booth, San Francisco

In view of the favorable response given to these five schools at the Lincoln meeting, they will be added to our accepted school-of-the-month file unless committee members send us objections or comments within the next 10 days.

James A. Anderson
Harold W. Boles
Leo E. Buehring
Charles E. Chick
M. Gene Coffey
Aaron Cohodes, *Acting Chairman*
Shiriey Cooper (Absent)
Simeon J. Domas (Absent)
Charles D. Gibson
John H. Hulvey

Ivan M. Luman
George W. Reida
Edward A. Spare
(represented by Harold Miers)
Guy O. Tollerud
Lloyd L. Waite
Arthur E. Wohlers
EX OFFICIO
A. L. Beck
Floyd G. Parker

LIAISON REPORTS

AMERICAN INSTITUTE OF ARCHITECTS

ASSOCIATION OF SCHOOL BUSINESS OFFICIALS OF THE U. S. AND CANADA

AMERICAN STANDARDS ASSOCIATION

AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS

ILLUMINATING ENGINEERING SOCIETY

LIAISON REPORT—
AMERICAN INSTITUTE OF ARCHITECTS

Meetings of the Committee on School and College Architecture were held this year on February 12 and 13 in Atlantic City, on May 14 and 15 in Washington, D.C. and on August 27-29 in Chicago. A meeting of the Committee was scheduled to be held at Providence, R.I. this past weekend.

The major concerns of the Committee this year have been the A.A.S.A. School Building Exhibit at Atlantic City, the preparation of Articles on school plant, movable school equipment, revision of the Questionnaire for Selection of Architects for School Building Projects and a Workshop on Schools for Exceptional Children. The meeting at Providence is intended to concern master planning college and university plants.

At the May meeting, the Committee recommended to Dr. Shirley Cooper and his secretary, Mrs. Sebastian, certain suggestions with reference to the A.A.S.A. exhibit including:

a. Greater selectivity by the jury in screening projects,

b. Adding two more jurors to permit more thorough study,

c. Having a selection of one mount devoted to a summary of the schools program instead of the booklet,

d. Standardization of lettering,

e. Increasing the fee by $5.00,

f. Recognizing overall excellence in addition to citing specific features.

Articles in preparation include "Flexibility," "Fees and Services," "Fads," "Language Labs," "Rifle Ranges," "Squash Courts," "Master Planning," "Cost Control of University Construction."

It is understood that the Questionnaire for Selection of Architects for School Building Projects will either be revised or that it will be replaced by a general guide being produced by the A.I.A. Commission on Public Affairs.

CLEVE O. WESTBY

THE AMERICAN STANDARDS ASSOCIATION

In following up on the recommendations contained in the report of liaison activities with the American Standards Association to the National Council on Schoolhouse Construction at its 1964 annual meeting, the following have been achieved:

1. Membership on the Construction Standards Board has been obtained with John L. Cameron having been appointed to represent the Council.
2. Membership on the Sectional Committees of Project A-53 has been secured with Henry J. Rissetto having been appointed to represent the Council.

Recommendations:

1. That the National Council on Schoolhouse Construction continue its liaison activities with the American Standards Association.
2. That Sectional Committee Z65, on Uniform Methods of Computing Area in Educational Buildings, be requested to attempt to reconcile the differences in the American Standard method and that employed by the American Institute of Architects.
3. That the National Council on Schoolhouse Construction, as one of the three sponsors, take steps to implement the recommendations of the American Standard Guide for School Lighting.

John L. Cameron

September 1965

ASSOCIATION OF SCHOOL BUSINESS OFFICIALS OF THE U. S. AND CANADA

The Association of School Business Officials met in San Francisco, California, in October 1964 with a total registration of 3,777—the largest registration in ASBO's 54-year history.

Since the San Francisco meeting the ASBO Board of Directors is seriously considering a change in its philosophy. In the past 55 years ASBO has engaged in no legislative activity of any kind. ASBO stands for efficiency in school business administration and for the wise expenditure of the taxpayer's dollar. Federal legislation has been enacted for special and general support of education which requires compliance with financial and procedural regulations, and ASBO has not been consulted. The change would be to have the officers and assigned members of ASBO appear before and work with any federal agency or legislative committee in working for the efficient and effective management of federal programs and to state the position of ASBO on such programs. This change of philosophy is to be considered by ASBO members during the 1965 convention, October 9-14, at Minneapolis, Minnesota.

The 1965 theme for ASBO is "The Professional Way—Search and Research."

The impact of the many federal legislative acts provides a whole new vista for research on the many phases of business administration.

N. L. GEORGE, *Liaison Representative*

Association of School Business Officials
of the U. S. and Canada

AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS, INC.

Correspondence during the past year with R. C. Cross, Executive Secretary of A.S.H.R.A.E. led to the designation of A. G. Simmonds, Chairman of their Technical Committee—Large Buildings, to work with me in investigating the possibility of joint participating in the preparation of standards for thermal environment in educational institutions. Mr. Simmonds proposes to designate two of his committee members to work with us.

A very preliminary outline of the cooperation proposed would be:

1. Agreement upon the Societies to be invited to participate.
   Suggested would be:

   American Association of School Administrators

   American Institute of Architects

   American Society of Heating, Refrigerating and Air Conditioning Engineers

National Council on Schoolhouse Construction

Possibly the Association of School Business Officials of the United States and Canada
Etc.

2. Agreement on a statement of purpose.

   Suggested would be:

   > "To cooperatively establish a set of technical standards suitable for adoption by various agencies to control the design and installation of heating, ventilating, and air conditioning systems in facilities constructed for educational purposes."

3. Agreement upon a plan for the preparation of the standards.
   It is assumed that the committee members would be given a preliminary outline in order that materials could be researched and ideas formulated. It is also assumed that a certain amount of face-to-face contract would be required, the details of which would have to be arranged.

4. Agreement on source of such financial support as would be required.

5. Agreement on distribution of standards as finalized and accepted by the participating Societies.
   The proposal awaits the granting of authority to proceed further.

It would seem most desirable that the Council indicate its official position on the proposal and authorize working with ASHRE in the development of a specific joint approach to be submitted for approval to each of the organizations involved. Basic, of course, will be the financing of the meetings assumed to be required.

John L'Hote

ILLUMINATING ENGINEERING SOCIETY

The past year has been a busy one for your liaison officer in terms of multiple activities involving the Illuminating Engineering Society. These activities including chairmanship of the School and College Lighting Committee, member of the Board of Fellows, member of the RQQ Committee, member of the Executive Committee of the Illuminating Engineering Research Institute, chairman of the Technical Advisory Committee on Daylighting, chairman of the School and Office Lighting Committee of the

U. S. National Committee of the International Committee on Illumination and, oh yes, I still work as Chief of the Bureau of School Planning in the State of California.

The School and College Lighting Committee of the I.E.S. has been working for the past two years trying to develop a set of performance specifications for school lighting which would summarize and support the recommendations made in the American Standards Association "Guide for School Lighting." It is expected this document will be complete within the next year. It is hoped to create a simple method for evaluating either existing lighting systems or proposed new lighting systems in a way that will give an objective picture of the strengths and weaknesses of existing or proposed systems in terms of all the factors that should be considered in the selection of any given system.

The Illuminating Engineering Research Institute has continued its research program on such vital problems as (1) Discomfort Glare from Large Area Sources; (2) Effect of Eye Movements on Need of Illumination; (3) Studies of Transient Adaptation Changes on Visual Performance; (4) Effect of Age on Illumination Needs, on Transitional Adaptation, and on Glare Evaluation. Probably the most needed research at the moment deals with the requirements of older eyes in the performance of visual tasks with accuracy, speed and comfort. This is true because practically all the research done in this field to date has used college students as subjects for experimentation. We know the requirements for older eyes are different. The problem before us now is how much different. Your liaison officer addressed the National Technical Conference of the Illuminating Engineering Society in New York in a presentation pointing out the values and needs of an objective research program.

Probably the hottest issue before the Illuminating Engineering Society today is a date concerning the adoption of a new direct glare rating system. As a representative of the users, your liaison officer has opposed the adoption of any new system of direct glare evaluation until such a new approach includes not only the theory but also a practical and relatively simple method of evaluating the applications of this theory in the field. At the present time we have officially adopted the "Scissors Curve" as such a screening device for light sources. It is a part of our National Council "Guide" as well as of the American Standards Association "Guide for School Lighting." It is important that members of the National Council request that light sources proposed for installations in schools and colleges meet the criteria of the Scissors Curve as a minimum screening procedure. If we are to assure continued progress in the development of more adequate light sources, it is imperative that planners such as ourselves insist on light sources complying with the requirements of the Scissors Curve as a start.

Again it has been a pleasure to serve our Council in this liaison relationship.

Charles D. Gibson

EXECUTIVE COMMITTEE MEETINGS

ATLANTIC CITY, NEW JERSEY
SAN FRANCISCO, CALIFORNIA
DENVER, COLORADO

BOARD OF DIRECTORS MEETINGS

LINCOLN, NEBRASKA

EXECUTIVE COMMITTEE MINUTES

ATLANTIC CITY, NEW JERSEY

FEBRUARY 14, 1965

The meeting was called to order by President F. C. Darby. Attending were Darby, Beck, Westby, Tonigan, Irwin, Parker, Dixon (Chairman of Professional Activities Committee), Strevell (Chairman of Research Committee), Tjomsland (Chairman of Future Activities Committee) and Reid.

The minutes were read from the last meeting. Westby moved and Irwin seconded that they be accepted. Motion carried.

I. EXECUTIVE COMMITTEE ACTION

Tjomsland requested that the Future Activities Committee meet (at his discretion) at Lincoln for two days prior to the meeting at Council expense in accordance with the travel and subsistence regulations. Beck moved and Irwin seconded that such authorization be given. Motion carried.

Irwin moved and Westby seconded that President Darby go to Lincoln and President-Elect Beck go to Palo Alto to make necessary arrangements for the upcoming annual conventions.

Westby moved and Beck seconded to accept the invitation that the 1967 annual meeting be held at Detroit, Michigan.

President Darby appointed the Nominating Committee: Robert Hemberger, James Reid, James Schooler, Arnold Tjomsland, and Norman Wrightson. President Darby is to notify the above members.

The local planning committee for the 1965 meeting at Lincoln, Nebraska is Merle A. Stoneman and Dave Hutcheson.

Liaison representatives appointed are: N. L. George, ASBO; C. D. Gibson, IES; John L'Hote, ASHRAE; and Cleve O. Westby, AIA.

Darby presented a proposal to seek out foundation support for the NCSC. Westby moved and Tonigan seconded that Darby be charged to pursue the idea. Motion carried.

Westby moved and Irwin seconded that 3,000 copies of the *Guide* be reprinted. Motion carried.

Beck moved and Tonigan seconded that the committee chairmen be authorized, exercising their own discretion to meet with their committees two days prior to the Lincoln meeting. The motion applied to the Research, Publications, Professional Activities, Future Activities, and Sub-Committees. Motion carried.

Dixon requested a budget of $150. Tonigan moved and Westby seconded that the request be granted. Motion carried.

II. DISCUSSION

Parker presented the mid-year financial report and tentative budget. Discussion followed. The amount allowed for travel ($500) was questioned as being inadequate to carry out the activities of the committees. Dixon suggested that the committees report to the Executive Committee with specific budget recommendations for a year's operation. Tonigan suggested that we look for foundation support and/or conduct projects which would yield income for the Council's use.

Westby reported on the evaluations of the Houston meeting. Discussion brought out the following points:

1. Communication with the speakers on a personal contact basis, if possible, is necessary.
2. Group participation was cited as being important.
3. More Council members could be used on the program.

Discussion then centered around the Lincoln program. Darby presented the progress made to date.

Aaron Cohodes discussed the *Nation's Schools* School-of-the Month Program. Discussion developed around the ground rules for continuing the program. The school-of-the-year award will be presented at the annual banquet of the NCSC.

Parker raised the question concerning credit being given to the Secretary as editor of publications. The concensus was that such credit should be given in each publication which the final editing was done at the Secretary's office.

Parker reviewed the office nominating procedure and it was agreed to follow last year's procedure: 1) appoint nominating committee; 2) announce in Newsletter; 3) announce nominees on the first day of the annual meeting and 4) report to the convention, receive nominations from the floor, and hold election.

Beck reported on the possible hotel accommodations for the 1966 convention at Palo Alto. He recommended that a general chairman be appointed.

Discussion developed concerning liaison representation to organizations other than those presently appointed.

Parker discussed prior interaction between NCSC and the Office of Civil Defense.

Parker reviewed the names of new members admitted since Houston. They are as follows: Frank W. Kittinger, Stacy Hertsche, Jonathan King, Gerald R. Rasmussen, Arthur Matthews, Robert Arnold, Neal McCormick, James Theodores, and Eldon Teten. F. W. Scherer was reported as deceased.

Discussion developed concerning the present application form.

McGuffey suggested that the Publications Committee and Sub-Committees will need to meet two days prior to the Lincoln Meeting.

McGuffey presented an outline of the planned publication entitled Maintenance and Operation Factors in School Plant Planning. Discussion followed.

III. STANDING COMMITTEE REPORTS

Research Committee

Wallace Strevell, Research Committee Chairman, reported on Research Committee activities.

1) *Clearinghouse*—the proposal that the NCSC, in cooperation with the U. S. Office of Education, would act as a clearinghouse for school plant information is to be re-submitted.

2) *Lincoln Session*—the Committee is planning one session at the 1965 Lincoln meeting to present research papers. Strevell requested that the Research Committee send letters to all members. Services of the headquarters office were offered.

3) You will recall that the Executive Committee approved our recommendations made at Houston to revise specific existing publications. Committee chairmen have been named to lead the writing sub-committees to revise these publications. These chairmen are as follows:

    a) Writing Sub-committee on *Planning Facilities for Higher Education*—Dr. Ross Neagley, Professor of Education, Temple University, Philadelphia, Pennsylvania.

    b) Writing Sub-committee on *Planning Facilities for Vocational and Technical Education*—Dr. W. W. Chase, Specialist in School Plant Administration, Schoolhousing Section, U. S. Office of Education, Washington, D.C.

    c) Writing Sub-committee on *Secondary School Plant Planning*—Dr. W. O. Wilson, University of New Mexico, College of Education, Albuquerque, New Mexico.

The writing sub-committees have begun their work. Each is attempting now to obtain working committee members and to organize for their attack on the problem assigned to them.

4) The Writing Sub-committee on *Maintenance and Operations Factors to be Considered in the Planning of Educational Facilities* is headed by Dr. Kenneth Widdall, Sub-committee Chairman. Dr. Widdall has been maintaining continuous contact with his committee members and has plans to meet with members of his committee at the Traymore Hotel at 5:00 p.m., Monday, February 15, to review their progress. It seems that most of their efforts since the Houston meeting have been to explore possible avenues for the financial support of their project. The Publications Committee Chairman plans to review the progress of this subcommittee with Dr. Widdall during the AASA Convention.

5) The Publications Committee has recommended that consideration be given to a reprint of the *Guide* at the earliest possible date. Its sales have been excellent and the prospects for future sales seem good. The committee recommends that you consider a reprint of 5,000 copies.

6) The Publications Committee has taken under advisement a suggestion from our President that we duplicate and distribute significant articles on school plant planning to be distributed to the NCSC membership. The chairman has contacted the committee membership by mail but all members have not responded. This needs careful study before we undertake such action.

Professional Activities Committee

Dixon reported the following proposed activities:

1) Encourage more professional organizations and associations to plan sessions on school plant planning through direct contact with the Executive Secretaries of the organizations where possible. The purpose of such a plan would be to a) get the topic of school plant planning on a program at the next conference, b) plan such activity on a state and national basis, c) be helpful in lining up resource people. This might be accomplished by asking each council member to recommend three people for such work and establish a list by doing a frequency count on individuals recommended.

2) Survey periodicals and stimulate publication in areas not adequately covered.

3) Develop a checklist for school planning courses to be provided to colleges and universities on request.

The meeting was adjourned at 5:00 p.m. It was agreed that the Executive Committee would meet on October 3, 1965 at 9:00 a.m. in Lincoln, Nebraska.

EXECUTIVE COMMITTEE MINUTES

SAN FRANCISCO MEETING

JUNE 4-6, 1965

Present were Francis C. Darby, A. L. Beck, Floyd G. Parker, Cleve O. Westby, Merle A. Stoneman, Frank E. Irwin, M. Ted Dixon, C. W. McGuffey, Wallace H. Strevell, Arnold C. Tjomsland and Richard F. Tonigan.

1) Darby was unanimously complimented for obtaining the $15,000 grant from the Ford Foundation [EFL]. Tonigan suggested that a plan be adopted for accepting the grant. It was generally agreed that the Council could not incorporate, change the Bylaws and become a tax-exempt, nonprofit organization in sufficient time to accept the EFL Grant. The $15,000 Ford [EFL] Grant was awarded to the Council for the purpose of planning:

a) further reorganization, expansion and development of the Council.

b) for the development of grant proposals emanating from the committees of the Council.

2) Moved by Westby, seconded by Beck, that the President and Secretary of the NCSC be empowered to negotiate with the Ford Foundation [EFL] in the securing and dissemination of the $15,000 grant. Motion passed. It was generally agreed that the grant should be accepted through the San Diego County Board of Education for the Council.

3) Motion by Tonigan, seconded by Beck, that the Council Secretary be authorized to draw and use sufficient funds from the Council savings account to meet the expense of the San Francisco Meeting. Such funds to be replaced upon the receipt of the $15,000 grant. Motion approved.

4) Moved by Beck and seconded by Westby that the budget presented by Darby for the $15,000 grant be approved. Motion passed.

5) Tonigan moved, and Beck seconded, that the Secretary-Treasurer be empowered to incorporate the Council as a nonprofit educational organization in the State of Michigan and that steps be taken to revise the Council Bylaws at the same time. Motion passed. It was pointed out that the Bylaws must provide for: 1) organization officers' payment or salaries, 2) the method for dissolution of the Council, 3) legal incorporation as a nonprofit educational organization, 4) exemption from state and federal taxes.

6) A policy statement adopted by the Executive Committee on October 7, 1964 was reviewed. The statement is as follows: "Grants of funds may be sought, received, and used for the preparation of publications, provided funds are passed through the NCSC budgeting and funding channels and

expended in accordance with financial and other policies of the NCSC." It was agreed that the adopted policy should apply to all grants received by the Council—following the legal incorporation of the Council. (See Item 3 g), page 121, 1964 Annual Proceedings.)

7) Moved by Westby, seconded by Tonigan that an exhibit of the "School of the Month" entries exhibited on an experimental basis at the 1965 Annual Meeting, Lincoln, Nebraska. Motion passed.

8) Moved by Tonigan that the local chairman of the Lincoln Meeting be empowered to invite Nebraska architects and superintendents of schools for the Wednesday morning, October 6, and Thursday afternoon, October 7, sessions of the Council. Motion passed.

The following agenda for Council Committee Meetings during the summer was presented and accepted:

PROPOSED CALENDAR FOR NCSC STUDY

I. PLANNING MEETING
Executive Committee and Committee Chairmen
San Francisco, June 4-6, 1965

II. WORKSHOP MEETINGS BY COMMITTEES
During period of June 18 - July 25
Select dates: June 18, 19, 20
June 25, 26, 27—Strevell
July 2, 3, 4, 5
July 9, 10, 11—Dixon
July 16, 17, 18—McGuffey
July 23, 24, 25—Tjomsland
(Each committee to meet at different time so that Research-Writer can be present)

III. EXECUTIVE COMMITTEE AND COMMITTEE CHAIRMEN MEET TO FINALIZE DECISIONS
During period of July 30 - August 15
Select dates: July 30, 31, August 1
August 6, 7, 8—Executive Committee, Denver
August 13, 14, 15
(Rough copies of reports from all committees to be available for study)

IV. REPORTING
August 15 —Final copy sent by mail to be reviewed by Executive Committee and returned for correction and printing
September 1 —Printing of approval report and applications
September 15—Distribution to total membership

V. AT LINCOLN, NEBRASKA—OCTOBER 3-7, 1965
Executive Committee discussion and action
Report to membership

Action by membership

Dr. Rodney E. Phillips was selected as secretary and recorder for all committee meetings for the NCSC project funded by Ford Foundation [EFL].

NCSC EXECUTIVE COMMITTEE

DENVER, COLORADO

AUGUST 6, 7, 8, 1965

Members present, Executive Committee:

FRANCIS C. DARBY, President
A. L. BECK, President-Elect
FLOYD G. PARKER, Secretary-Treasurer
FRANK E. IRWIN
MERLE A. STONEMAN
RICHARD F. TONIGAN
CLEVE O. WESTBY

Members present, Committee Chairmen:

M. TED DIXON, Professional Activities
CARROLL W. MCGUFFEY, Publications
WALLACE H. STREVELL, Research
ARNOLD C. TJOMSLAND, Future Activities

Recorder:

RODNEY E. PHILLIPS

I—COMMENDATION

It was moved, seconded, and carried unanimously that the members of the Standing Committees and the Future Activities Committee be commended for their outstanding efforts reflected in their committee summaries.

II—REPORTS, EXECUTIVE COMMITTEE AND FINAL REPORT

A. The Research-Writer was directed to prepare a summary report of the Executive Committee session for distribution to the Committee. The report was submitted to and edited by President Darby.

B. A final comprehensive report entitled, "NCSC AND THE FUTURE" will be drafted by the Research-Writer. This draft will be sent to each individual Executive Committee member and the committee chairmen for editing and concurrence prior to being printed a *Newsletter* to the membership. This will be mailed to the membership prior to the October meeting in Lincoln.

III—GENERAL AGREEMENTS AND ASSIGNMENTS

A. Dr. Parkr will complete the Articles of Incorporation Document during the week of August 8-14 and expedite securing and signatures of the members of the Executive Committee. The question of incorporation in the State of Michigan will be investigated and if serious problems are encountered the Secretary-Treasurer will choose another course of action.

B. Dr. Parker will secure a legal opinion on the adequacy of the revision of the Bylaws as concerns federal tax exemption.

C. Dr. Parker will send 1,000 blank *Newsletter* sheets and pre-addressed envelopes to Dr. Phillips. These materials will be used for preparation and mailing of the final report of the summer project.

D. President-Elect Beck is charged with the formation of a positive public relations program for NCSC in 1965-66.

E. Standing committee reports at the Lincoln meeting will focus on the work of the individual committees.

F. It was moved, seconded, and carried unanimously that President-Elect Beck be authorized travel monies and necessary subsistence expenses for a meeting with President Darby prior to the annual meeting in October.

G. It was moved, seconded, and carried unanimously that Dr. McGuffey be authorized to offer Council assistance to support seminars on planning community (junior) college facilities.

H. Dr. McGuffey will prepare a "NCSC Flyer" for Executive Committee consideration at the Lincoln meeting.

IV—DISCUSSION HIGHLIGHTS

A. A full-time Executive Secretary and necessary clerical and professional help is absolutely necessary for Council growth and expansion.

B. The United States Office of Education is in the process of converting from a service agency to a spending agency. In the future, USOE *may* be able to contract with professional organizations such as NCSC for specific projects.

C. Copyrights, where possible, should remain the property of the Council until officially released.

3

D. It is an abdication of responsibility to present generalizations to the membership for action. Concise well-developed plans are needed.

E. The basic function of the Council is one of service.

F. The *Guide* has been the biggest single contributor to the professional stature of the Council.

V—MEMBERSHIP

A. Membership expansion is predicated upon keeping the professional integrity of the Council.

B. Expansion of membership has three goals: (1) increase the professional stature of the Council, (2) increase influence upon the educational profession, and (3) increase operational revenues.

C. It is agreed that commercial and industrial firms should not be included in Council membership at this time.

D. Consulting firm memberships are subject to the invitation and approval of the Executive Committee.

E. An increase of from 800 to 1,000 members is a desirable goal for the 1965-66 year. Expansion will be self-limiting.

F. The Chairman of the Professional Activities Committee has agreed to serve as membership coordinator for fiscal 1965-66. A State Membership Chairman for each State will be appointed by the President. The State Chairman's responsibilities shall include identification of consulting firms actively involved in school plant planning and identification of individuals who are actively involved in school plant planning and who should become Council members.

G. The Chairman of the Professional Activities Committee must receive strong Council support and assistance in carrying out his duties as Membership Coordinator.

VI—FINANCIAL GRANTS

A. Educational Facilities Laboratory has been contacted recently. It was indicated that EFL would be unable to finance the basic expansion of the Council; however, they encouraged the Council to submit proposals for specific projects on school planning.

B. NCSC must finance its basic operational structure. Grant monies shall be earmarked for specific projects and the funds controlled by separate accounting. This does not preclude, however, the use of a percentage of the grant for operational overhead expenses of the Council.

C. Most grants are the result of the efforts of a dedicated individual working within the policy of the organization.

D. Agencies, such as Western Behaviorial Sciences Institute (WBSI) La Jolla, California, are well equipped to handle leadership seminars.

E. Commercial and industrial firms could provide sustaining grants for specific Council purposes. These firms could receive recognition at the annual meeting.

F. The following topics represent areas where grants are needed:

1. NCSC Continuing Study Seminar—A seminar dealing with instructional progress and its implications for NCSC leadership.
2. Computer system identification of the NCSC membership—This could include the identification of consulting firms as well as school personnel that are actively involved in school planning. Dr. Drake's study could be used as a starting point for the study.
3. Funding of the writing subcommittee on "The Maintenance and Operational Factors influencing the Design of Educational Buildings."
4. Graduate student intern for the NCSC central office.
5. Expand the *Newsletter*.
6. Study conference of members of various professional organizations who have common interests and problems. An alternative would be to provide an opportunity for NCSC members to meet with members of other professional organizations.
7. Graduate Intern Project—NCSC has developed a project for fifty interns.
8. Research Bulletin Project—From one to ten research bulletins are planned.

It is anticipated that these bulletins could serve as a basis for expansion and revision of the *Guide*. Bulletins would be subcontracted with major institutions of higher learning.

9. Subcontract school facilities projects from major organizations with large contracts.
10. Abstracting Service Project—This project has been submitted to the USOE for consideration.
11. Service projects with other professional organizations.
12. Revision of the *Guide*.
13. Funding of writing subcommittees working on specific publications.
14. Developmental seminars to assist local agencies in the planning of community (junior) college facilities.

G. *Grants will not be accepted to promote commercial products.*

VII—ANNUAL MEETING AND CONFERENCES

A. Graduate students should be welcomed as guests at the annual meeting. This can be handled informally.

B. One of the major functions of the annual meeting is to display new products and processes. Those attending must have the opportunity for self-improvement.

C. It was moved, seconded, and carried unanimously that George Reida be authorized two days expenses and per diem for work prior to the Lincoln meeting. Mr. Reida is serving as exhibit coordinator.

D. It was moved, seconded, and carried unanimously that a $10.00 registration fee be charged for the annual meeting, starting with the fiscal year 1966-67.

E. It was moved, seconded, and carried unanimously that all writing subcommittee members be authorized two days expenses and per diem for work prior to the Lincoln meeting.

F. It was moved, seconded, and carried unanimously that $300.00 be authorized for expenses of the writing subcommittee on higher education facilities. This committee plans to meet prior to the Lincoln meeting.

G. AIA has suggested that NCSC contact the AIA Program Committee to determine areas where the Council can assist in AIA program presentations.

VIII—PUBLICATIONS

A. AIA has indicated a willingness to cooperate on revision of our present joint publication. Joint publication efforts should be expanded with AIA and other professional organizations.

B. The Publications Committee will prepare a budget for consideration by the Executive Committee.

IX—ITEMS FOR EXECUTIVE COMMITTEE AGENDA, OCTOBER 9, 1965.

A. The question of institutional (i.e., school districts) memberships will be discussed.

B. The question of industrial and commercial firms memberships will be discussed.

C. Regional conferences on school planning are becoming more common. NCSC members should attend and participate where possible.

D. The architectural exhibit at the Lincoln meeting will be evaluated. Necessary expenses of the architectural exhibit will be authorized for payment.

E. The new *Guide* should come out in 1969. Consideration should be given to the early formation of a writing committee.

F. Selected exhibits, based upon a theme, are highly desirable for the annual conference. These exhibits should concentrate upon new products and processes. Professional assistance would be required to coordinate this program.

X—TENTATIVE CALENDAR FOR IMPLEMENTATION

A. August—
Incorporation and legal review of the Bylaws.

B. September—
Mail final report to membership, including Bylaws changes necessary.
Prepare applications for grants.

C. October—
Annual meeting.
Hear reports.
Adopt policies.
Change Bylaws.
Authorize action by Executive Committee.

D. November, December—
Executive Committee
Adopt rules and regulations as authorized.
Launch study for permanent location.
Launch search for Executive Secretary.
Submit requests for financial grants for projects.
Implement membership drive.

E. February—
Executive Committee meeting in conjunction with AASA.
Man a display booth at the AASA Conference.
Co-sponsor or assist with AASA's architectural exhibit.
Sponsor specialized meetings as part of the AASA program.
Appoint Executive Secretary and authorize selection of staff.
Plan October annual meeting.

F. May—
Executive Committee, committee chairmen and Executive Secretary planning.

XI—NCSC BUDGET

A. *Income*

		65-66	*66-67*	*67-68*
Old Mbrs.	450 @ $ 10	4,500	—	—
	650 @ $ 20	—	13,000	—
	850 @ $ 20	—	—	17,000
New Mbrs.	200 @ $ 10	2,000	—	—
	200 @ $ 20	—	4,000	—
	150 @ $ 20	—	—	3,000
Old Firms	200 @ $100	—	20,000	—
	300 @ $100	—	—	30,000
New Firms	200 @ $100	20,000	—	—
	100 @ $100	—	10,000	—
	100 @ $100	—	—	10,000
Publications		5,000	5,000	10,000
Interest		300	300	300
Annual Meeting-Registration	300 @ $ 5	—	1,500	1,500
Exhibits		—	—	—
Institutional Members		—	—	—
Industrial Members		—	—	—
TOTALS		31,800	53,800	71,800

B. *Expenditures*

Salaries:	65 - 66	66 - 67	67 - 68
Executive Secretary	$11,662*	$20,000	$20,000
Research Associate	—	—	15,000
Asst. to Sec'y-Treas. (Grad. Student)	—	2,600	—
Office Assistants	8,000	10,000	12,500
Editorial Assts.	—	—	2,500

*Seven months salary during fiscal 65-66.

	65-66	*66-67*	*67-68*
Operating Expenses:			
Rent	—	1,500	1,750
Office Supplies	1,400	2,000	2,500
Machine Rental	500	1,500	2,000
Printing:			
Newsletter	1,000	1,500	2,000
Proceedings	1,500	1,500	1,500
News Publications			
Reprints of *Guide*	—	2,000	—
Programs, etc.	400	750	750
Communications	338	450	800
Travel:			
Exec. Sec'y & Staff	3,000	4,000	4,000
Executive Committee	2,000	3,000	3,500
Standing Committees	2,000	3,000	3,000
TOTALS	31,800	53,800	71,800

XII—BYLAWS REVISION

A. The following recommended changes in the Bylaws were the result of extensive study by the Executive Committee. Items were acted upon individually and passed by unanimous agreement.

B. The Bylaws Revision will become a part of the final report submitted for information to the total membership prior to the annual meeting. The Bylaws Revision will be submitted for action by the membership at the Business Session scheduled for the Third General Session of the Annual Meeting on October 5, 1965.

C. At the time when the Bylaws revisions are presented to the membership, it recommended that the Executive Committee be empowered to do necessary editing of the Bylaws to make them conform to the requirements of federal regulations concerning tax-exemption for non-profit educational organizations.

MINUTES OF BOARD OF DIRECTORS MEETINGS

INCORPORATORS MEETING, JUNE 4, 1965

A meeting of the incorporators of a non-profit corporation to be known as the National Council on Schoolhouse Construction was held in San Francisco, California, on June 4, 1965.

The following persons were present at the meeting:

FRANCIS C. DARBY	RICHARD F. TONIGAN
A. L. BECK	FRANK E. IRWIN
FLOYD G. PARKER	MERLE A. STONEMAN
CLEVE O. WESTBY	

On motion duly made, seconded, and unanimously carried, Francis C. Darby was elected Chairman of the meeting and Floyd G. Parker, Secretary thereof.

After discussion, upon motion by Richard F. Tonigan, seconded by A. L. Beck, it was unanimously

RESOLVED, that Floyd G. Parker, secretary, be empowered to take measures to incorporate the Council as a non-profit corporation in the State of Michigan, all present being incorporators and the initial directors thereof;

RESOLVED FURTHER, that the Council by-laws be revised.

On motion duly made and seconded, it was unanimously

RESOLVED, that the incorporators and directors take all steps necessary to qualify the corporation under Section 501 of the Internal Revenue Code of 1954 for the tax advantages available under that section.

There being no further business, the meeting thereupon was adjourned.

OCTOBER 3, 1965

A meeting of the Board of Directors of the National Council on Schoolhouse Construction, a non-profit corporation, was held at Lincoln, Nebraska, on October 3, 1965.

The following directors were present:

FRANCIS C. DARBY	RICHARD F. TONIGAN
A. L. BECK	FRANK E. IRWIN
FLOYD G. PARKER	MERLE A. STONEMAN
CLEVE O. WESTBY	

being all the directors named as such in the Articles of Incorporation.

On motion duly made, seconded, and unanimously carried, Francis C. Darby was elected Chairman of the meeting and Floyd G. Parker Secretary thereof.

The Chairman stated that all directors being present, there was no need for written waivers of notice to the holding of the meeting.

On motion made by Irwin, seconded by Tonigan, and unanimously carried, the Board agenda was adopted for the duration of the convention.

The minutes of previous regular and special meetings, February 14, June 4-6, August 6-8, 1965 were read. On motion by Beck, seconded by Westby, and unanimously carried, the minutes were approved.

The Secretary reported that on September 15, 1965, the Articles of Incorporation were duly filed and recorded in the office of the Michigan Corporation and Securities Commission and the filing fee and franchise fee duly paid. The Secretary was directed to insert the copy of the Articles of Incorportaion received from the Michigan Corporation and Securities Commission in the place provided in the corporate minutes book.

The Secretary further reported that the annual report required by statue was filed with the Michigan Corporation and Securities Commission before October 1, 1965.

A proposed set of bylaws in final draft form was presented for examination. After discussion, upon motion duly made, seconded and unanimously carried, it was

RESOLVED that the proposed bylaws be submitted to the total membership for approval, membership in voting on such bylaws to be as defined by the Council before incorporation.

Secretary Parker initiated discussion regarding the UNESCO meeting to be held November 16-19, and noted that two NCSC members would be eligible to attend. On motion duly made by Tonigan, seconded by Beck and unanimously carried, it was

RESOLVED that the Board authorize the Chairman to appoint no less than one representative to attend this meeting.

The Secretary reported seventy persons had been elected to Council membership, thus far this year. Four additional names were brought to the Board for action and were approved.

The Secretary reported that Alex R. Taylor, Melvin M. Davis, F. Mulliss requested acceptance of resignation. On motion duly made, seconded and unanimously carried, these resignations were accepted.

The Secretary formally announced the deaths of Dr. Edward J. Braun, Thomas L. Higgins, and F. R. Scherer, all former Council presidents.

The Secretary announced five members eligible for life membership status. These were Paul J. Keith, A. D. Dotter, Elmer C. Deering, J. L.

Taylor & Wilfred F. Clapp. On motion duly made by Beck, seconded by Tonigan and unanimously carried, it was

RESOLVED that the above named individuals are hereafter eligible to all rights and privileges of life membership status.

The Secretary-Treasurer presented the financial report and the audit report to the Board. On motion duly made, seconded and unanimously carried, it was

RESOLVED that the report be accepted by the Board of Directors and

RESOLVED FURTHER that this report be presented to the membership at the Annual Meeting.

Due to the increased financial activity, as indicated by Secretary-Treasurer Parker's financial report, motion was duly made by Tonigan, seconded by Beck and unanimously carried that $200.00 be allocated for professional accounting consultation during the coming year.

The Chairman directed the Secretary to inform standing committee chairmen that they are to meet with the Board on Monday, October 4, at 2:30 p.m. He also requested that the chairman of the Future Activities Committee be directed to meet with the Board at that time.

Discussion regarding the projects and grants reflected back to those topics enumerated in the Denver minutes and also printed in the September *Newsletter*. Upon suggestion by Tonigan that the Board define priorities and areas of responsibility, items 3, 12 and 13 were generally determined to be within the NCSC planning and budgetary obligation. Items 2, 4, 6 & 7 were considered to be grant proposal items. A combination of 1, 6, and 14 were considered worthy of exploration with EFL representative, Jonathan King. On motion duly made by Westby, seconded by Irwin and unanimously carried, Tonigan was assigned the responsibility for exploring item 9.

Beck reported on liaison with other organizations. He urged NCSC involvement in working with news media. It was generally agreed that the local arrangements committee should take such responsibility at its annual meeting. On motion duly made by Westby, seconded by Tonigan and unanimously carried, it was

RESOLVED that liaison with other professional organizations be developed as a grant proposal item.

On motion duly made by Westby, seconded by Tonigan and unanimously carried, the Secretary-Treasurer was given authority to change the quantity rate for NCSC Guides similar to that followed by AASA and NEA.

REPORTS AND DISCUSSION

Member Stoneman reported on local arrangements. He was commended for a thorough job of preparation.

Chairman Darby brought up for discussion communication from Marvin Johnson regarding liaison between ASCD and the Council. Stoneman discussed communications from Guidance Associates regarding whether NCSC would be interested in sponsoring a promotional film. Chairman Darby requested Secretary Parker to obtain more information.

Chairman Darby reported on the present status and present use of the $15,000.00 EFL grant. He noted that $3,250.00 still remains and nearly all claims to date have been paid. It was emphasized that the remainder is to be used within the intended purposes of the grant stipulation.

Policy determination regarding future architectural exhibits at NCSC annual meetings was discussed and tabled for final decision later in the week.

A discussion of the membership drive was held at the request of Professional Activities Chairman Dixon. It was agreed that a chairman should be appointed in each province and state. Dixon was also told that the Board would expect procedural recommendations from his committees.

The role and function of the office of Executive Secretary was discussed. Westby and Tonigan were appointed by Chairman Darby to draft a job analysis and candidate qualifications for a report on Monday.

The *Newsletter* format was discussed and it was agreed it will remain the same for the time being, although changes may be made during the coming year.

Chairman Darby determined that the Board would meet from 8:00-5:00 Monday. He also indicated that a meeting on Friday is very likely. The tentative calendar for the Board meetings (after this week) was discussed. The Board agreed to the format of implementation developed in Denver. They agreed to meet late in November or early in December. These dates will be announced by A. L. Beck, President-elect, on Friday, October 8.

Meeting adjourned at 5:15.

OCTOBER 4, 1965

Meeting called to order by Chairman Darby at 8:00 p.m., October 4, 1965, at Lincoln, Nebraska.

The following directors were present:

FRANCIS C. DARBY
A. L. BECK
FLOYD G. PARKER
CLEVE O. WESTBY
RICHARD F. TONIGAN
FRANK E. IRWIN
MERLE A. STONEMAN

being all the directors named as such in the Articles of Incorporation.

The Chairman stated all directors being present, there was no need for written waivers of notice to the holding of the meeting.

Secretary-Treasurer Parker reported on Bylaw changes. He indicated that he would have revised copies of Bylaws available for all members at the annual meeting.

Westby and Tonigan reported on the criteria for the position of Executive Secretary. Chairman Darby requested them to continue refining these efforts based upon Board discussion. Chairman Darby indicated that this topic should be discussed again on Friday, October 8.

The following is a list of institutions to which information on candidates for the position of Executive Secretary should be sent:

University of California
University of Chicago
Teachers College, Columbia University
Illinois University
Indiana University
Michigan State University
University of Minnesota
Montana State University
University of Nebraska
New York University
University of North Carolina
Ohio State University
University of Connecticut
University of Florida
University of Houston
Peabody College
Pennsylvania State University
San Francisco State College
Stanford University
Temple University
University of Tennessee
Washington State University
Western Michigan University
University of Wisconsin

Arnold Tjomsland, Chairman of the Committee for Future Activities, made a final report in which he indicated he and his committee members were pleased that the Board had followed their recommendations. He discussed with the Board architectural exhibits as a source of income; proposed membership fee structure; Board and general membership involvement regarding position of Executive Secretary; willingness of members from his committee to aid in implementation of planned changes. Chairman Darby, on behalf of the Board, expressed thorough appreciation to Committee Chairman Tjomsland and the members of his Future Activities Committee.

The Board met with Jonathan King of EFL. In discussion, King noted that EFL is willing to provide small grants primarily related to planning. He emphasized that NCSC leadership should feel free to confer with him regarding ideas or proposals prior to submitting a complete final proposal. Regular seminars were discussed regarding proposed EFL under-writing. King suggested that one seminar be completed before others are initiated. King noted that the EFL and NCSC relationship has been clearly defined by both parties. On behalf of the Board and the entire membership, Chairman Darby extended thanks to Mr. King for his past help and willingness to aid NCSC in the future.

STANDING COMMITTEE REPORTS:

The following standing committee chairmen were present:

Mr. M. Ted Dixon, Professional Activities Committee and Mr. Donald Bush, Committee member

Mr. C. W. McGuffey, Publications Committee

Mr. Wallace Strevell, Research Committee

Chairman Dixon reported three of his members will be present at Lincoln during the convention. He indicated that considerations are being made for a membership drive and he discussed the potential firm application forms presently under consideration and the development of a brochure. McGuffey presented a format of a brochure which could be developed. Dixon indicated he hoped to have a meeting of selected provincial and state membership chairmen on Wednesday if Bylaw revisions were approved at the annual meeting.

Also discussed was how areas without NCSC representatives could be covered and whether a membership goal should be set for December.

Chairman Darby indicated that the Professional Activities Committee will be charged with the responsibility of making the divisions based upon the comments made by the Board of Directors if the Bylaw changes are approved by the membership. He indicated that a goal should be set of 200 to 250 firm memberships with broad representation in the United States and Canada. The Publications Committee will be charged with the responsibility of preparing a membership brochure (in conjunction with the Secretary's office).

Dixon reported that ASCD representatives have been contacted and seem interested in NCSC participation in their annual program. On motion duly made by Westby, seconded by Tonigan and unanimously carried, it was

RESOLVED that Dixon be granted approximately $50.00 to spend for a breakfast meeting to be held during the AASA meeting in February.

Dixon also indicated that other organization representatives seem interested in developing closer relationship with NCSC. Dixon reported on the developmental planning of the seminar which should be completed by February. He noted that his committee budget of $150.00 was not yet used and requested continuance. On motion duly made by Tonigan, seconded by Irwin and unanimously carried, this request was granted.

Chairman Strevell of the Research Committee reported that his committee intends to keep up the annotated bibliography service. He also indicated he would prefer to continue presentation of research papers at the annual meetings for two or three years to determine the value and effect. He reported the abstracting research and development documents project will be stored in the U.S.O.E. About thirty NCSC members will serve as abstractors. Mrs. Oliver will be the editor. Although this is a one year contract which NCSC has with the U.S.O.E., Strevell indicated that work should begin soon on renewal. Chairman Strevell indicated that reviews should be published in the *Newletter;* however, this could be subcontracted if it is desired. Chairman Darby asked Strevell to look further into the matter of preparing such reports.

Strevell reported on the research seminar proposal. He indicated that it would be held at Ohio State University; the purpose of this seminar is to stimulate and bring in interested persons from around the continent. Strevell indicated that the research committee is interested in developing the present *Newsletter* into a technical journal.

A series of proposals regarding implications for Title IV Funding was tabled for a later meeting. Discussion arose regarding construction of regional or national laboratories. Chairman Strevell was asked to delve further into this topic.

Chairman Darby announced a special meeting of the Board of Directors at 4:00, Wednesday, October 6.

Meeting adjourned at 5:30 p.m.

OCTOBER 6, 1965

Meeting called to order by Chairman Darby at 4:00 p.m., October 6, 1965, at Lincoln, Nebraska.

The following directors were present:

FRANCIS C. DARBY	RICHARD F. TONIGAN
A. L. BECK	FRANK E. IRWIN
FLOYD G. PARKER	MERLE A. STONEMAN
CLEVE O. WESTBY	

being all the directors named as such in the Articles of Incorporation.

The Chairman stated all directors being present there was no need for written waivers of notice to the holding of the meeting.

Discussion initiated at request of M. Ted Dixon, Chairman of Professional Activities Committee, regarding membership drive. On motion duly made, seconded and unanimously carried, Dixon was given authority to prepare the program for recruitment of new members.

Dixon noted that each province or state will have a chairman responsible for this function. He also indicated that each chairman will have a packet of materials and application forms. On motion duly made, seconded and unanimously carried, Chairman Darby was authorized to request Dixon's presence at the Board meeting in early December for a full report of progress and activities.

C. W. McGuffey, Chairman of Publications Committee, presented requests for financial support of needed writing sub-committee meetings. The Board indicated to McGuffey that the present financial status made it extremely unwise to encumber any large sums of money.

McGuffey presented Ken Widdall, Chairman of the Maintenance and Operation Writing Committee, who explained to the Board reasons for his financial request. On motion duly made by Tonigan, seconded by Beck and unanimously carried, it was

RESOLVED that the expenses for the first planned meeting of the above-named writing committee be underwritten up to the amount of $1,200.00.

RESOLVED FURTHER that if finances permit as reviewed by the Board in December, the three remaining planned meetings will be financed, and Committee Chairman McGuffey will be so notified.

Wallace Strevell, Chairman of the Research Committee, brought the research proposal discussion before the Board. On motion duly made, seconded and unanimously carried, it was

RESOLVED that an effort be made to present a proposal to the U. S. Office of Education for a research and resources laboratory under Title IV.

Chairman Darby directed Board member Tonigan to deliver a "letter of interest" by October 15, 1965.

On motion duly made by Irwin, seconded by Westby and unanimously carried, Merle Stoneman was appointed to take charge of developing and writing the prospectus.

Chairman Darby charged Tonigan and Stoneman with the responsibility of drafting the letter of interest. He further charged Tonigan and Strevell with the responsibility of developing recommended procedural guidelines to be used by Stoneman.

President-elect Beck was asked to report a meeting with Jonathan King regarding additional financial support from EFL to be used for planning. The request was considered within reason by King and further information will be reported by Beck in December. King requested a letter of intent regarding proposals and considerations be sent to EFL at an appropriate time to be determined later.

Meeting adjourned at 6:30.

OCTOBER 8, 1965

Meeting called to order at 7:30 a.m., October 8, 1965, at Lincoln, Nebraska.

The following directors were present:

Francis C. Darby	Richard F. Tonigan
A. L. Beck	Frank E. Irwin
Floyd G. Parker	

Written waivers of notice were received from President-elect Cameron and Director Guild.

On motion duly made, seconded and unanimously carried, A. L. Beck was elected Chairman and Floyd Parker, Secretary thereof.

On motion duly made by Tonigan, seconded by Irwin and unanimously carried, the election of officials by the total membership was confirmed.

Chairman Beck and Director Darby reported to the Board that they had conferred with Walter Beggs, Dean of the Teacher's College, University of Nebraska, requesting the release of Merle Stoneman for a brief period of time to develop the grant proposal for submission to the U. S. Office of Education. Beggs agreed to the request.

Chairman Beck asked each member of the Board of submit a letter to Stoneman regarding his impressions of the detailed activities and responsibilities of the Council.

On motion duly made by Darby, seconded by Irwin and unanimously carried, it was

RESOLVED that Director Tonigan was authorized to hand carry the letter of interest to the U. S. Office of Education under the date of October 8, 1965.

RESOLVED FURTHER that any expense incurred in this effort be charged to the Council.

Secretary Parker was requested by Chairman Beck to make up a statement of interests and activities of all Council members. This information is to be sent to Merle Stoneman. On motion duly made by Darby, seconded by Irwin and unanimously carried, it was

RESOLVED that Merle Stoneman be given authorization to travel as necessary in development of the grant prospectus and

RESOLVED FURTHER that funds be allocated from the Council for this purpose.

On motion duly made by Darby, seconded by Irwin and unanimously carried, that the Secretary write a letter of thanks to Harold Gores of EFL (with a copy to Jonathan King) for the $15,000 grant.

The architectural exhibit was thoroughly discussed and upon motion duly made, seconded and unanimously carried, it was

RESOLVED that a similar exhibit be planned for the 1966 Convention in Palo Alto, California.

It was suggested that a theme be determined for each annual meeting and that this exhibit be geared to such a theme.

On motion duly made, seconded and unanimously carried, Secretary Parker was given authority to add a clerk accountant to his office staff if possible.

DISCUSSION

Chairman Beck appointed Francis Darby as the representative to the UNESCO meeting November 16-19, 1965. Secretary Parker was designated as alternate.

Aaron Cohodes, editor of *The Nation's Schools*, met with the Board of Directors and the following points were discussed:

1) The School-of-the-Month needs wider coverage in the submission of building plans.
2) We should refine present forms being used so that it will have wider use beyond the mere selection process.
3) The Council was offered the film of John Shaver's presentation regarding the School-of-the-Year award.
4) Discussed possibility of binding reprints of each month's School-of-the-Month and placing in a cover for distribution to Council members.
5) School-of-the-Month Committee needs more time at the annual meeting. It was suggested that the Committee consider meeting Monday afternoon preceding the opening of the Conference.

Tonigan suggested that President Beck consider appointing an *ad hoc* Committee to evaluate the School-of-the-Month project at the 1966 annual meeting.

Chairman Beck announced that the Board of Directors will meet in San Francisco or Denver, December 3, 1965. The Chairman will notify all Board members of exact details. Also included in this meeting will be Merle Stoneman and M. Ted Dixon.

Chairman Beck indicated that the Board of Directors should plan to meet Wednesday preceeding the opening of AASA in Atlantic City. He then directed Secretary Parker to handle necessary arrangements. The Chairman announced that the 1968 convention site will be selected at the December meeting. Chairman Beck agreed to send job descriptions for the Executive Secretary position to each member of the Board for review. He indicated that when ready, this information will be announced in the *Newsletter*.

Meeting adjourned at 10:00 a.m.

APPENDICES

ARTICLES OF INCORPORATION

BYLAWS

TRAVEL AND SUBSISTENCE RULES

MEMBERS

ANNUAL MEETINGS

ARTICLES OF INCORPORATION

(Non-Profit)

These Articles of Incorporation are signed and acknowledged by the incorporators for the purpose of forming a non-profit corporation under the provisions of Act No. 327 of the Public Acts of 1931, as amended, as follows:

ARTICLE I.

The name of the corporation is NATIONAL COUNCIL ON SCHOOLHOUSE CONSTRUCTION.

ARTICLE II.

The purpose or purposes for which the corporation is formed are as follows: To operate exclusively for charitable, scientific or educational purposes, including but not limited to: (1) making gifts and contributions to one or more organizations (other than organizations testing for public safety) described in Section 501(c)(3) of the Internal Revenue Code of 1954; (2) improving education by influencing planning of educational facilities through (a) the exchange, publication and/or dissemination of current and emerging ideas, concepts and promising practices in educational facilities planning; (b) the identification, completion and diffusion of needed research; (c) the improvement of training programs for educational planning specialists in colleges and universities; (d) the strengthening and promotion of the use of coordination planning services by all affected educational institutions or agencies; (e) the promotion of economy in the design and construction of eductaional facilities; (3) to do and engage in any and all lawful activities that may be incidental or reasonably necessary to any of the foregoing purposes and to have and exercise all other powers and authority now or hereafter conferred on non-profit corporations under the laws of the State of Michigan.

PROVIDED, HOWEVER, that any references herein to any provision of the Internal Revenue Code of 1964 (herein called the "Code") shall be deemed to mean such provision as now or hereafter existing, amended, supplemented, or superseded, as the case may be.

PROVIDED, FURTHER, that in all events and under all circumstances, and notwithstanding merger, consolidation, reorganization, termination, dissolution, or winding up of this corporation, voluntary or involuntary or by operation of law, the following provisions shall apply:

1. This corporation shall not have or exercise any power or authority either expressly, by interpretation or by operation of law, nor shall it directly or indirectly engage in any activity, that would prevent this corporation from qualifying (and continuing to qualify) as a corporation described

in Section 501(c)(3) of the Code, contributions to which are deductible for federal income tax purposes.

2. No substantial part of the activities of this corporation shall consist of carrying on propaganda, or otherwise attempting, to influence legislation; nor shall it in any manner or to any extent participate in, or intravene in (including the publishing or distributing of statements), any political campaign on behalf of any candidate for public office; nor shall it engage in any transaction defined at the time as "prohibited" under Section 503 of the Code.

3. This corporation shall never be operated for the primary purpose of carrying on a trade or business for profit. Neither the whole, nor any part or portion, of the assets or net earnings of this corporation shall be used, nor shall this corporation ever be organized or operated, for purposes that are not exclusively charitable, scientific or educational within the meaning of Section 501(c)(3) of the Code.

4. No compensation or payment shall ever be paid or made to any member, officer, director, trustee, creator, or organizer of this corporation, or substantial contributor to it, except as a reasonable allowance for actual expenditures or services actually made or rendered to or for this corporation; and neither the whole nor any part or portion of the assets or net earnings, current or accumulated, of this corporation shall ever be distributed to or divided among any such person; provided, further, that neither the whole nor any part or portion of such assets or net earnings shall ever be used for, accrue to, or inure to the benefit of any member or private individual within the meaning of Section 501(c)(3) of the Code.

5. In the event of termination, dissolution or winding up of this corporation in any manner or for any reason whatsoever, its remaining assets, if any, shall be distributed to (and only to) one or more organizations described in Section 501(c)(3) of the Code.

ARTICLE III

Location of the first registered office: 411 Erickson Hall, Michigan State University, East Lansing, Ingham County, Michigan.

Postoffice address of the first registered office is: 411 Erickson Hall, Michigan State University, East Lansing, Michigan.

ARTICLE IV

The name of the first resident agent is FLOYD G. PARKER.

ARTICLE V

Said corporation is organized upon a Non-Stock basis.

The amount of assets which said corporation possesses is:

Real property—None

Personal property—None

Said corporation is to be financed under the following general plan: Membership dues, sale of publications, gifts, bequests, devises, loans and leases if real property is acquired.

ARTICLE VI

The names and places of residence, or business, of each of the incorporators are as follows:

Francis C. Darby, 6401 Linda Vista Road, San Diego, California (County Department of Education)

A. L. Beck, Office of Superintendent of Public Instruction, Old Capitol Bldg. Olympia, Washington

Floyd G. Parker, 411 Erickson Hall, Michigan State University, East Lansing, Michigan

Cleve O. Westby, 175 West State, Trenton, New Jersey (State Dept. of Education)

Richard F. Tonigan, Teachers College, Columbia University, 525 West 120th St., New York, N.Y.

Frank E. Irwin, State Department of Education, 111-B Cordell Hull Building, Nashville, Tennessee

Merle A. Stoneman, Teachers College, University of Nebraska, Lincoln, Nebraska.

ARTICLE VII

The names and addresses of the first board of directors are as follows:

Francis C. Darby, County Dept. of Education, 6401 Linda Vista Road, San Diego, California

A. L. Beck, Office of Supt. of Public Instruction, Old Capitol Bldg., Olympia, Washington

Floyd G. Parker, 411 Erickson Hall, Michigan State University, East Lansing, Michigan

Cleve O. Westby, State Dept. of Education, 175 West State, Trenton, New Jersey

Richard F. Tonigan, Teachers College, Columbia University, 525 W. 120th St., New York, N.Y.

Frank E. Irwin, State Dept. of Education, 111-B Cordell Hull Bldg., Nashville, Tennessee

Merle A. Stoneman, Teachers College, University of Nebraska, Lincoln, Nebraska.

ARTICLE VIII

The term of the corporate existence is perpetual. (If for a limited number of years, then state such term instead of perpetual.)

ARTICLE IX

(Here insert any desired additional provisions authorized by the Act)

NONE

We, the incorporators, sign our names this 15th day of September, 1965.

Francis C. Darby (signed)
A. L. Beck (signed)
Floyd G. Parker (signed)
Cleve O. Westby (signed)
Richard F. Tonigan (signed)
Frank E. Irwin (signed)
Merle A. Stoneman (signed)

State of MICHIGAN
County of INGHAM
(One or more of the parties signing must acknowledge before the Notary)

On this 15th day of September, 1965 before me personally appeared FLOYD G. PARKER to me known to be one of the persons described in and who executed the foregoing instrument, and acknowledged that he executed the same as his free act and deed.

(signed) Joy B. Wooten
Joy B. Wooten
Notary Public for Ingham County,
State of Michigan

APPENDIX B:
NATIONAL COUNCIL ON SCHOOLHOUSE CONSTRUCTION BYLAWS

I. Membership

1. Individuals and professional firms or organizations meeting one of the following classifications are eligible for membership in the Council:

(a) National, state, regional, provincial, and local public and nonpublic educational officials, and employees whose duties include responsibility for planning educational facilities.

(b) College and university staff members who teach educational facilities courses, direct educational facilities planning and research, direct or conduct educational facilities surveys, or render educational facilities consultant services.

(c) Consulting firms normally commissioned upon a fee basis by the educational facility owner or his prime consultant are eligible for membership in the Council. These firms are employed to provide professional-technical services for educational facility planning. These firms would include consulting firms such as architects, engineers, educational consultants, and campus planners.
The consulting firm membership entitles the firm to receive one set of current Council publications without cost. The firm may designate one official representative to participate in the annual meeting. Firm representatives are extended all rights and privileges of regular members other than the privileges of holding elected office and voting in the business affairs of the Council.

(d) Editors of educational and architectural periodicals regularly devoting considerable space to educational facilities problems.

(e) All present members of the Council and all who may hereafter be admitted to membership may retain membership subject to compliance with subsection 2.

2. Membership shall terminate upon failure to pay dues for two years. A former member may be restored to membership only upon the payment of dues for the current and the next preceding year and upon eligibility as a new member at the time of restoration.

3. Upon recommendation of the Board of Directors and a majority vote of the members present and voting at any annual meeting, any person who has for ten years been a member in good standing, has reached the age

of 60 years, and has retired from the work that qualified him for membership in the Council may become a life member entitled to all the rights and privileges of the Council irrespective of subsection 2.

4. All applications for membership shall be filed with the Secretary-Treasurer. Admission to membership shall be by majority vote of the full membership of the Board of Directors, except that the Board of Directors may in its discretion delegate to the Secretary-Treasurer authority to admit to membership any person or consulting firm who clearly meets the requirements as set forth in these bylaws.

II. Officers

1. The officers shall be a President, a President-Elect, and a Secretary-Treasurer.

(a) The President shall be the executive head of the organization and as such shall perform the usual duties of his office. The term of the President shall be one year, and the office shall be held by the person who served as the President-Elect during the preceding year.

(b) The President-Elect shall perform the usual duties of a vice-president and such other duties as the Board of Directors may assign. His term shall be one year.

(c) The Secretary-Treasurer shall perform the normal duties of the office, including the maintenance of the National Headquarters. He shall be appointed by and serve at the pleasure of the Board of Directors.

2. All officers except the Secretary-Treasurer and President shall be elected by ballot at the annual meeting, and shall assume office at the conclusion of said annual meeting. The Board of Directors shall, at the first session of each annual meeting, announce the procedures for nominating and electing officers, and these procedures shall be followed unless modified by a majority vote of the members present and voting.

3. In event of vacancy in any office occurring between annual meettings, the Board of Directors may by majority vote fill the vacancy by the appointment of a person to serve until the next annual meeting. If a vacancy extends beyond the next annual meeting, there shall be elected at said annual meeting a person to serve for the remainder of said term.

4. Elected Council officers serve without personal compensation for their conduct of Council business except for necessary travel and subsistence expenses.

III Committees

1. There shall be a Board of Directors of seven members. Three members shall be elected to serve for overlapping terms of three years. The

retiring President shall be a member for one year. The President-Elect shall become a member of the Board upon his election to that office. The President shall serve as chairman, and the Secretary-Treasurer as secretary to the Board.

The Board of Directors shall perform such duties as may be assigned by the Council, and carry on the business of the Council during the interim between meetings. The provisions of these Bylaws applicable to the election of officers and to the filling of a vacancy in any office shall apply to the three elected members of the Board of Directors.

2. There shall be a Research Committee to review, evaluate, and report significant research findings to the membership; to propose research projects which in its judgment should be undertaken, and recommend suitable means whereby each such project should be undertaken and reported; and to do such other things as in its judgment will promote better research and more effective use of research findings in the achievement of the purposes of the Council. This Committee shall broadly represent Council membership and shall consist of five members appointed by the President to serve for over-lapping terms of five years. Subcommittees from the membership of the Council may be constituted by this Committee when necessary to carry out its purpose.

3. There shall be a Publications Committee to plan and direct the preparation of manuscripts for publication by the Council and to make recommendations to the Board of Directors for discussion and publication of such manuscripts as the Committee deems worthy of Council sponsorship. This Committee shall broadly represent Council membership and shall consist of five members appointed by the President to serve for overlapping terms of five years. Subcommittees from the membership of the Council may be constituted by this Committee when necessary to carry out its purpose.

4. There shall be a Professional Activities Committee responsible for reviewing, evaluating, and making recommendations with respect to the preparation of professional workers in the area of educational facilities; the quality and extent of services available in the area of educational facilities at the local, state, provincial, and national levels; the activities of other organizations in the area of educational facilities; and such other matters as in its judgment will improve the quality of educational facilities services. This Committee shall broadly represent Council membership and shall consist of five members appointed by the President to serve for overlapping terms of five years. Subcommittees from the membership of the Council may be constituted by this Committee when necessary to carry out its purpose.

5. The chairman of each standing committee of the Council, together with the President, the President-Elect, and such other persons as the President may designate, shall constitute the Program Committee of the Council. The President shall serve as chairman.

6. There shall be such *ad hoc* committees and liaison representatives as the Council may direct or the President may determine and appoint.

7. Upon recommendation of the chairman of any standing committee and the approval by the Board of Directors, actual and necessary expenses of the committees and/or subcommittees shall be paid from Council funds.

8. Committee members, while serving on Council committees serve without personal compensation for the conduct of Council business except for necessary travel and subsistence expenses.

IV. Fiscal Year and Dues

1. The fiscal year shall be from July 1 through June 30. Annual regular membership dues shall be $20.00 starting with the 1966-67 fiscal year.

2. Annual Consulting Firm Membership dues shall be determined by the Board of Directors and shall not be less than $100.00.

3. Initial membership in the Council shall be consummated upon payment of the annual membership fee, said fee covering the dues for the fiscal year of the election to membership.

V. Time and Place of Meetings

1. The time and place of the regular annual meeting shall be determined by the Board of Directors and shall be announced to the membership at least eighteen months in advance. Time and place of any special general membership meeting shall be announced by the Newsletter in at least two consecutive issues and shall not be less than 30 days after the second general notice to all members. A quorum for the transaction of business at any regular or special meeting of the members shall consist of 51 per cent of the current membership present and voting at the annual meeting of the Council.

2. Regular or special meetings of the Board of Directors shall be announced to the Board members by the President no less than 30 days prior to such meetings.

3. Any group of members may hold a regional meeting in furtherance of the purposes of the Council. Notice of such meeting shall be given to the Secretary-Treasurer in advance. A representative of the regional meeting shall be designated by the committee that arranges said regional meeting to report to the Board of Directors and to the next annual meeting regarding the nature and success of the regional meeting.

VI. Contracts: How Executed

1. The Board of Directors, except as in the Bylaws otherwise provided, may authorize any officer or officers, agent or agents, to enter into any contract or execute any instrument in the name of and on the behalf of the

Council (corporation), and such authority may be general or confined to specific instances; and unless so authorized by the Board of Directors, no officer, agent, or employee shall have any power or authority to bind the Council by any contract or agreement or to pledge its credit to render it liable for any purpose or to any amount.

VII. Change in Bylaws

Changes in these Bylaws may be made at any annual meeting of the Council by a two-thirds majority of the members present and voting, provided that the vote on any proposed change will be postponed for at least twelve hours after introduction of the proposed change unless an earlier vote is assented to by unanimous consent.

APPENDIX C:

TRAVEL AND SUBSISTENCE REGULATIONS

In the interests of the Council it is evident that the elected officers and designated committees must carry out activities at periods other than during the dates of the annual meeting. To expedite such activities with a semblance of balance relative to the assets of the Council and to assist the secretary-treasurer in the proper accounting for such funds, the following regulations were developed. They were approved by the Executive Committee and made effective on October 1, 1961.

I. Authorization

A. Travel and subsistence must be authorized by the Executive Committee. Officers and committees are urged to determine travel and subsistence needs for the period between annual meetings and to present such requests to the Executive Committee at the scheduled sessions of this committee. Special and emergency requests may be made during the period between annual meetings for the proper canvassing of the Executive Committee.

II. Travel Voucher

A. All expense items authorized by the Executive Committee must be reported in duplicate on the regular travel voucher form supplied by the secretary-treasurer's office. The carbon copy will be returned with payment of the claim.

III. Receipts

A. Receipts must accompany all expense vouchers for:

1. Travel by plane, train, or bus.
2. Hotel or motel accommodations.

IV. Travel

A. Reimbursements may be made for first class transportation including travel by:

1. Plane, train, or bus.
2. Pullmen (lower berth if available).
3. Taxi to, from, or between depots and airports (limousine service should be used when feasible and substantially cheaper).

B. Reimbursements for private car will be authorized at 8 cents per mile. Bridge and turnpike tolls will be reimbursed; however, parking costs will be limited to $1.50 per day. Travel by auto is not recommended except in cases where plane or train is not feasible.

C. See Sections II and III.

V. Lodging

A. Authorized lodging expenses will be limited to a maximum of $9 per day. Tips of not more than 50 cents for each hotel occupancy will be reimbursed.

B. See Sections II and III.

VI. Meals

A. Meals obtained on travel away from home may be reimbursed as follows:

1. Daily maximum—$7. For less than a full day, the maximums are: breakfast—$1.50, lunch—$2.25, and dinner—$3.25 but the total for the day cannot exceed the $7 maximum.

VII. General

A. All reimbursement for travel and subsistence must be made by check by the secretary-treasurer of the Council.

B. It is recommended that all authorized claims for travel and subsistence be reported to the secretary-treasurer within thirty days following travel.

C. All members are urged to travel tax-exempt if their positions permit such exemption.

D. The Council cannot assume liability coverage for travel of its members. All members are urged to provide liability coverage personally.

APPENDIX D: MEMBERS OF THE NCSC

† Indicates registration at 1965 annual meeting.

* Indicates new member.

Adinolfi, Anthony G., 28 E. Bayberry Drive, Glenmont, New York. (1958)
Alexander, L. T., Superintendent of Construction, Nashville-Davidson County School System, 2601 Bransford Avenue, Nashville 4, Tennessee. (1959)
Alford, Cecil H., Assistant Superintendent, 15125 Farmington Road, Livonia, Michigan. (1958)
Allison, E. F., Assistant Director of School Buildings, State Department of Education, P.O. Box 480, Jefferson City, Missouri. (1955)
†*Amundrud, Clarence, Supervisor of School Administration, Department of Education, Legislative Building, Regina, Saskatchewan. (1965)
†Anderson, J. A., Chief Consultant School Plant Service, Texas Education Agency, Austic 11, Texas. (1961)
Armstrong, Charles E., Assistant Superintendent, Planning and Engineering Services, Denver Public Schools, 414 14th Street, Denver, Colorado. (1954)
Arnold, Robert E., Assistant Superintendent and Dean of Campus Facilities, West Valley Junior College, 51 E. Campbell Avenue, Campbell, California. (1964)
Austin, Frank D., Business Manager-Secretary, Amarillo Public Schools, Administration Building, 910 West 8th Street, Amarillo, Texas. (1956)
*Bailey, Edwin R., Chairman, Division of Educational Administration, University of Missouri, 5100 Rockhill Road, Kansas City, Missouri. (1965)
†Bailey, G. G., Engineer, Georgia State Department of Education, 160 Central Avenue, Atlanta, Georgia. (1961)
Baker, L. J., Business Manager, Portland Public Schools, 620 N.E. Halsey Street, Portland 8, Oregon. (1958)
†Baker, Morris R., Construction Engineer, Board of Education of Baltimore County, 212 Aigburth Road, Towson 4, Maryland. (1958)
Barnes, James R., Assistant Superintendent, Pinellas County Board of Public Instruction, 1960 East Druid Road, Clearwater, Florida. (1961)
Barron, William E., Director, Office of School Surveys and Studies, 325 Sutton Hall, The University of Texas, Austin 12, Texas. (1961)
Barth, Alf O., A.I.A., Coordinating Architect, Board of Public Instruction, Orange County, P. O. Box 271, Orlando 2, Florida.

†Beck, A. L., Director of Facilities and Organization, Office of Superintendent of Public Instruction, Old Capitol Building, Olympia, Washington. (1952)

Beckley, Herman F., Director of Buildings and Grounds, Muncie Community School, 328 East Washington Street, Muncie, Indiana. (1961)

Beckman, Joseph M., Assistant Supervisor, Cincinnati Public Schools, 2355 Iowa Street, Cincinnati 6, Ohio. (1947)

Benda, Charles J., Jr., Consulting Architect, School Plants Section, State Department of Education, 105 Knott Building, Tallahassee, Florida. (1964)

†Betts, Wayne F., Architect, School Plant Section, State Department of Education, Knott Building, Tallahassee, Florida. (1964)

Black, William B., Chief School Plant Specialist, Massachusetts School Buildings Assistance Commission, 88 Broad Street, Boston 10, Massachusetts. (1951)

Blackburn, C. S., Professor of Educational Administration, Box 6265, North Texas Station, Denton, Texas. (1957)

Blome, Arvin C., Associate Professor, Department of Educational Administration, University of Wyoming, University Station, Box 3274, Laramie, Wyoming. (1964)

*Bloom, Arnold M., Editor, AMERICAN SCHOOL & UNIVERSITY, 757 Third Avenue, New York, New York. (1965)

†Boerrigter, Glenn C., U. S. Office of Education, Washington 25, D.C. (1961) (1964)

†Boice, John R., Associate Director, School Planning Laboratory, School of Education, Stanford University, Stanford, California. (1962)

†Boles, Harold W., Professor of Education, Western Michigan University, Kalamazoo, Michigan. (1961)

*Bowling, Kermit, Supervisor, State Department of Education, 3143 Stafford Drive, Nashville, Tennessee. (1965)

†Boyles, Norman L., Department of Education, 220 Curtiss Hall, Iowa State University, Ames, Iowa. (1963)

*Bradley, Burke W., Superintendent-President, San Joaquin Delta Junior College, 3301 Kensington Way, Stockton 4, California. (1965)

Briscoe, William S., Professor of Education, University of California at Los Angeles, 243 23rd Street, Santa Monica, California. (1954)

Broadfoot, Albert R., Architect, 5557 Arlington Road, Jacksonville 11, Florida. (1953)

Brown, Hyder Joseph, Architect, Livingstone-Brown, AIA, 2158 Avenida De La Playa, La Jolla, California. (1953)

Buechner, A. L., Program Administrator, School Planning, Department of Public Instruction, 147 N. Wine-State Capitol, Madison, Wisconsin. Re-instated (1964)

†Buehring, Leo E., Associate Editor, THE NATION'S SCHOOLS, 1050 Merchandise Mart, Chicago, Illinois. (1964)

Buffaloe, Henry L., Engineering Consultant, 1115 Lake Wheeler Road, Raleigh, North Carolina. (1955)

†Bumbarger, Chester S., School of Education, University of Oregon, Eugene, Oregon. (1961)

Buros, Francis C., Assistant Superintendent, White Plains Public Schools, Five Homeside Lane, White Plains, New York, (1954)

†Bush, Donald O., Professor of Education, Central Michigan University, Mt. Pleasant, Michigan. (1951)

†Bush, George H., 4408 Kenmore Road, Indianapolis 26, Indiana. (1940)

Calvert, Aubrey W., Supervising Field Representative, Bureau of School Planning, State Department of Education, Room 810 State Building, 217 West First Street, Los Angeles 12, California. (1954)

†Cameron, John L., Director, Administrative, Instructional Support Branch, U. S. Office of Education, Washington 25, D.C. (1950)

†Cammon, J. H., Chief, Office of School Plant Services, State Department of Education, State Office Building, Atlanta 3, Georgia. (1964)

Campbell, James T., Director, Division of Administration, State Department of Education, Tallahassee, Florida. (1948)

*Carlsson, Edward S., Jr., Vice President for Business Affairs, Wisconsin State University, La Crosse, Wisconsin. (1965)

Castaldi, Basil, Southeast Massachusetts Technological Institute, 741 State Road, North Dartmouth, Massachusetts. (1952)

Caudill, W. W., % Caudill, Rowlett & Scott, 3636 Richmond Avenue, Houston 27, Texas. (1948)

Chambers, George A., Assistant Professor of Educational Administration, University of Illinois, Urbana, Illinois. (1964)

Chambers, T. C., Jr., Consultant, School Buildings Maintenance, Administration and Finance, State Department of Education, 160 Central, Atlanta 3, Georgia. (1961)

†*Chaney, Verne C., Director, School Facilities Planning, Jefferson County School District R-1, 1580 Yarrow, Lakewood, Colorado. (1965)

Chapman, Arthur E., Supervisor of School Buildings, State Department of Education, Richmond, Virginia. (1932)

†Chase, William W., Department of Health, Education and Welfare, U. S. Office of Education, 400 Maryland Avenue S.W., Washington, D.C. (1954)

†Chick, Charles E., Assistant Director, Division of Administration, State Department of Education, Tallahassee, Florida. (1961)

Chlada, Ambrose J., Jr., Director of School Facilities, Baltimore Public Schools, Administration Building, 3 East 25th Street, Baltimore 18, Maryland. (1963)

†Clapp, W. F., 1610 Blair, Lansing, Michigan. (1943)

Clark, William F., 1096 Mount Hope Street, North Attleboro, Massachusetts. (1951)

*Cleland, Wallace B., Archiect, Planning Coordinator, Detroit Public Schools, 5057 Woodward Avenue, Detroit, Michigan 48202. (1965)

†Cochran, Glen, Assistant Professor, University of Arkansas, 107 Peabody, Fayetteville, Arkansas.

Cochrane, Robert, Municipal Consultants, 665 Capital Life Center, 1600 Sherman Street, Denver, Colorado. (1956)

†Coffee, M. Gene, Chief, Plant Facilities, Department of Public Instruction, Des Moines, Iowa. (1960)

†Cohodes, Aaron, Editor of THE NATION'S SCHOOLS, 1050 Merchandise Mart, Chicago, Illinois. (1963)

†Collins, George J., Chief, Department of Health, Education and Welfare, Office of Education, Washington 25, D.C. (1960)

†Conrad, Marion J., Head, Educational Administration and Facilities Unit, Educational Development Division, The Ohio State University, 196 Arps Hall, Columbus, Ohio. (1952)

†Cooper, Carl C., School Programs Operations, Housing and Home Finance Agency, Office of the Regional Administrator, Federal Building, 450 Golden Gate Avenue, San Francisco 3, California. (1963)

Cooper, Dan H., School of Education, University of Michigan, Ann Arbor, Michigan. (1947)

Cooper, Shirley, Associate Secretary, American Association of School Administrators 1201 16th Street, N.W., Washington 6, D.C. (1955)

†Cramer, Harold L., Consultant, School Plant Planning, School Plant Section, Room 105 Knott Building, State Department of Education, Tallahassee, Florida. (1963)

Crockett, Keith L., Executive Director of Field Services, State Department of Education, Augusta, Maine. (1959)

Cron, Theodore O., Department of Health, Education and Welfare, U. S. Office of Education, Washington 25, D.C. (1963)

*Crouch, Cazamer, Technical Director, Illuminating Engineering Society, 345 East 47th Street, New York, New York. (1965)

†Culver, Harold W., Director of School Planning and Construction, San Diego Unified School District, 4100 Normal Street, San Diego 3, California, (1961)

†*Cundy, John J., Superintendent, Unified School District 361, 406 W. Main, Anthony, Kansas. (1965)

†Dalton, Elmer D., Supervisor of School Buildings, Office of Public Instruction, Room 302 State Office Building, Springfield, Illinois. (1963)

†Darby, Francis C., Assistant Superintendent, San Diego County Department of Education, 6401 Linda Vista Road, San Diego, California. (1948)

†Daum, Henry, Secretary and Business Manager, Abington Public Schools, Abington, Pennsylvania. (1957)

Davey, C. Leland, Granite School District, Director of Buildings and Grounds Department, 340 East 3545 South, Salt Lake City, Utah. (1958)

†Davis, Donald L., Associate Director of School Planning Laboratory, School of Education, Stanford University, Stanford, California. (1961)

*DeJarnette, Elliott H., III, Supervisor of Facilities, Chas. County Board of Education, Box 298, LaPlata, Maryland, (1965)

†DeRemer, Richard W., Associate Professor, 2820 Cathedral of Learning, University of Pittsburgh, Pittsburgh 13, Pennsylvania. (1962)

†Dixon, M. Ted, Associate Superintendent, La Mesa-Spring Valley Schools, 4750 Date Avenue, La Mesa, California. (1955)

Dixon, W. Irving, % Dixon and Norman, Architects, 1103 East Main Street, Richmond 19, Virginia. (1945)

Domas, Simeon, Administrator, Massachusetts School Building Assistance Commission, 88 Broad Street, Boston, Massachusetts. (1952)

Domian, O. E., Director, Bureau of Field Studies and Surveys, College of Education, University of Minnesota, Minneapolis, Minnesota. (1951)

Donovan, Bernard E., Executive Deputy, Superintendent of Schools of New York City, 110 Livingston Street, Brooklyn, New York. (1960)

†*Duffin, Robert D., Supervisor of Buildings and Grounds, Newton City Schools, Box 307, Newton, Kansas. (1965)

Duncan, Harlen L., Director, School Plant Planning, State Department of Education, Capitol Building, Room W-136, Charleston, West Virginia. Reinstated (1964)

†*Dunlop, Donald L., Superintendent, Construction and Maintenance, Etobicoke Board of Education, 540 Burnamthorpe Road, Etobicoke, Ontario, Canada. (1965)

†Duvall, Elven E., Superintendent of Schools, Jackson, Michigan. (1959)

Dykstra, Harry, Professor of Education and Director of Educational Research and Service Center, University of South Dakota, Vermillion, South Dakota. (1963)

Earthman, Glen I., Assistant Professor of Education and Coordinator of Elementary Education, University of North Dakota, Grand Forks, North Dakota.

*Easton, Erving E., Building Planner, Seattle School District No. 1, 815 4th Avenue North, Seattle 9, Washington. (1965)

†*Eatough, Clair L., Supervising Architect Advisor, State Department of Education, 721 Capitol Mall, Sacramento, California. (1965)

Eckert, A. W., Assistant Superintendent, Business Affairs, Minneapolis Public Schools, 807 N.E. Broadway, Minneapolis, Minnesota. (1963)

†Edwards, H. H., Director of Building Planning and Special Administrative Services, Tulsa Public Schools, P.O. Box 4715–Ranch Acres, Tulsa 14, Oklahoma. (1963)

Eitel, George L., Director of School Construction, Department of Education, County of Henrico, P.O. Box 3-V, Richmond, Virginia. (1964)

†Ellis, C. Lyman, Jr., Consultant Architect, Texas Education Agency, Austin 11, Texas. (1961)

†Englehart, George D., Director, School Building Service, State Department of Education, Jefferson City, Missouri. (1947)

Erchul, J. Thomas, Architect, Suite 1010, San Diego Trust and Savings Building, 530 Broadway, San Diego, California. (1951)

*Erickson, Ed K., Associate Professor of Education, Central Washington State College, Ellensburg, Washington. (1965)

†Etherington, Fred, Chief Architect, Board of Education, 24 Astor Avenue, Toronto, Ontario, Canada. (1951)

Evans, Ben H., A.I.A., The American Institute of Architects, 1735 New York Avenue, Washington 6, D.C. (1962)

Fake, Charles E., Mountainview, Newtonville, New York. (1952)

†Fales, Lloyd E., 1719 Harding Avenue, Lansing 10, Michigan. (1956)

Featherstone, Richard L., Assistant Dean, 518 Erickson Hall, Michigan State University, East Lansing, Michigan. (1956)

†*Felix, Glen E., Director of Business and Finance, Cherry Creek School District No. 5, 4700 South Yosemite, Englewood, Colorado. (1965)

†Ferendino, Andrew J., Architect to the Board, Dade County, Florida, 2575 South Bayshore Drive, Miami, Florida. (1964)

Ferris, Harvey H., Field Representative, Bureau of School Planning, State Department of Education, Sacramento, California. (1955)

†Finchum, R. N., U. S. Office of Education, FOB #6, 400 Maryland Avenue, Washington, D.C. (1965)

Fleming, Bruce, Associate Professor of Education, University of Saskatchewan, 1618 Morgan Avenue, Saskatoon, Saskatchewan, Canada.

Flesher, William R., Director, School Survey Service, 1286 West Lane Avenue, Columbus 21, Ohio. (1945)

Fletcher, Glenn, Deputy Superintendent, 1300 Capitol Avenue, Houston, Texas. (1956)

Foster, John T., Supervising Architect, 105 Knott Building, Tallahassee, Florida. (1960)

Foutz, Bill D., 5400 North Harvey, Oklahoma City, Oklahoma. (1951)

Fowler, Fred M., Chief, School Plant Planning, Department of Education, Roger Williams Building, Hayes Street, Providence, Rhode Island, (1951)

Fraley, Claude T., Supervisor of Building and Construction, Lynchburg Public Schools, 11th and Court Streets, Lynchburg, Virginia.

Freeman, Ray C., Supervisor of Construction, Shoreline Public Schools, E. 158th and 20th Avenue N.E., Seattle 33, Washington. (1959)

†French, B. Avery, Director of Planning Services, Denver Public Schools, 414 14th Street, Denver 2, Colorado. (1963)

Frittenburg, Gordon D., Chief Architect, Toronto Board of Education, 155 College Street, Toronto 2-B, Ontario, Canada. (1961)

†Frostic, Ralph F., Educational Consultant, Department of Public Instruction, Room 19 Capitol Building, Lansing, Michigan. (1962)

†Fuller, William S., Director of Higher Education, Facilities Planning, State Education Department, Albany, New York. (1964)

†Funkhouser, Scott A., Phillips, Swager and Associates, Architects, 414 Hamilton Boulevard, Peoria, Illinois. (1959)

†Gardner, Dwayne E., Specialist, Planning Educational Facilities, U. S. Office of Education, Washington 25, D.C. (1957)

Garland, James E., Maurice H. Connel and Associates, Inc., Consulting Engineers, 315 N.W. 27th Avenue, Miami, Florida. (1948)

Geckler, Jack W., Administrative Assistant, Court House, Hamilton County Schools, Chattanooga, Tennessee. (1964)

George, N. L., Assistant Superintendent, Oklahoma City Public Schools, Oklahoma City, Oklahoma. (1942)

Gibbins, Neil L., Associate Professor, Marshall University, Department of Education, Huntington, West Virginia. (1960)

†Gibson, Charles D., Chief, Bureau of School Planning, State Department of Education, Sacramento, California. (1945)

Gilbert, Ernest R., School Architect, Richmond School Board, 2907 North Boulevard, Richmond 30, Virginia. (1962)

Gilliland, John W., Director, School Planning Laboratories, University of Tennessee, Knoxville, Tennessee. Re-instated (1961)

Gilrain, Paul A., Director of School Plant, Room 414, 32 Franklin Street, Chamber of Commerce Building, Worcester 8, Massachusetts. (1958)

Gilson, Frank C., Architect, Clark, Clark, Millis & Gilson, 625 James Street, Sycracuse 3, New York. (1945)

Glass, Kenneth M., Assistant Professor, McGuffey Hall, Miami University, Oxford, Ohio. (1963)

*Gleason, Kenneth G., Assistant Professor, Wichita State University, College of Education, Wichita, Kansas. (1965)

Goby, Lee W., Assistant Superintendent of Schools, Department of Buildings and Grounds, Springfield Public Schools, District #186, 1900 W. Monroe, Springfield, Illinois. (1962)

*Goedeke, M. Thomas, Associate Superintendent, Administration, Baltimore City Public Schools, 3 E. 25th Street, Baltimore, Maryland. (1965)

Goenner, Roger J., Associate Professor, Central Michigan University, 441 West Remus Road, Route 2, Mt. Pleasant, Michigan. (1963)

†*Goodwin, John, University Architect, Wayne State University, 5271 Cass Avenue, Detroit 2, Michigan. (1965)

Gores, Harold B., President, Educational Facilities Laboratories, Inc., 477 Madison Avenue, New York 22, New York. (1962)

†*Graves, Ben E., Project Director, The Research Council of the Great Cities, Program for School Improvement, Chicago, Illinois. (1965)

Greear, Helen Coleman, Associate Architect, State Department of Education, School Plant Services, 160 Central Avenue S.W., Atlanta, Georgia. (1964)

*Green, Alan C., Associate Professor, School of Architecture, Rensselaer Polytechnic Institute, Troy, New York. (1965)

†Griffith, William J., Assistant Professor, 196 Arps Hall, 1945 N. High Street, The Ohio State University, Columbus, Ohio. (1964)

Grimm, Russell I., Consultant of School Plant Planning, School Building Services, P.O. Box 2019, State of New Jersey Department of Education, Trenton 25, New Jersey. (1962)

Guice, E. Hamilton, A.I.A., Architect, 414 S. Thornton Freeway, Dallas, Texas. (1959)

Guild, Robert L., Educational Consultant, Protestant School Board of Greater Montreal, 6000 Fielding Avenue, Montreal 29, Quebec, Canada. (1956)

†Gunderloy, Frank C., Director of Anne Arundel County Board of Education, 204 Pasadena Road, Pasadena, Maryland (1961)

Gwynn, Thomas, S., Jr., Assistant Superintendent, Board of Education, Prince Georges County, P.O. Drawer 120, Upper Marlboro, Clinton, Maryland. (1952)

Hake, Barthold R., Director, Division of Buildings and Grounds, Louisville Public Schools, 506 West Hill Street, Louisville 8, Kentucky. (1962)

†*Hallett, Hugh S., Construction Supervisor, Seattle School District #1, 815 4th Avenue N., Seattle, Washington. (1965)

†*Hamill, John P., Assistant Supervisor of School Buildings, Commonwealth of Virginia, State Department of Education, Richmond, Virginia. (1965)

Hamilton, J. P., Supervisor, State Department of Education, Capitol Building, Baton Rouge, Louisiana. (1965)

†*Hammond, S. R. (Sid), Director of Buildings and Sites, Lake Washington School District, P.O. Box 619, Kirkland Washington. (1965)

Handy, John W., Jr., Architect, 2268 Main Street, Stratford, Connecticut. (1950)

Hanover, Charles A., Warren Consolidated Schools, 11044 Common Road, Warren, Michigan. (1955)

†Hartman, Theodore W., Chief, Bureau of Housing Equipment and Supplies, 1380 E. 6th Street, Cleveland Board of Education, Cleveland, Ohio. (1964)

†Hawley, Clifford, Administrative Assistant to the Superintendent of Schools, 351 W. Wilson, Madison 3, Wisconsin. (1955)

Heagerty, Frank, Professor of Education, 212 Education Building, University of Missouri, Columbia, Missouri. (1963)

Hedglin, Robert, Director of Maintenance, Transportation and Purchasing Agent, Mapleton Public Schools, District #1, 591 East 80th Avenue, Denver, Colorado. (1963)

Heding, Howard W., Professor of Education, 204 Hill Hall, University of Missouri, Columbia, Missouri. (1963)

*Hein, William J., Consultant, Odell MacConnell Associates, 750 Welch Road, Palo Alto, California. (1965)

†Hemberger, Robert, Assistant of Director, Nashville-Davidson County School System, 2505 Bransford Avenue, Nashville, Tennessee. (1964)

Herrick, John H., Director, Office of Campus Planning, 190 North Oval Drive, Room 309, The Ohio State University, Columbus 10, Ohio. (1945)

*Hertsche, Stacy, Administrator of Plant and Facilities, Fullerton High School District, 1000 N. Lemon, Fullerton, California. (1965)

†Hick, Basil L., Education Facilities Planning, State Department of Education, Albany 1, New York. (1952)

*Higgins, Ben T., P.E., Buildings and Grounds, Hillsborough County Board of Public Instruction, P.O. Box 3408, Tampa, Florida. (1965)

Higgins, E. Eugene, 10236 Dale Drive, Lord Fairfax Estates, Fairfax, Virginia. (1955)

Hilburn, Henry J., Director of Planning, Montgomery County Public Schools, 850 N. Washington Street, Rockville, Maryland.

Hilfiker, Leo R., Supervisor of School Planning, Department of Public Instruction, State Capitol, Madison, Wisconsin. (1963)

Hill, Frederick W., Deputy Superintendent, New York City Public Schools, 110 Livingston Street, Brooklyn 1, New York. (1954)

Hodgen, John E., Specialist in School District Organization, School Building Assistance Commission, 88 Broad Street, Boston 10, Massachusetts. (1959)

Holcombe, Howard W., Department of Education, P.O. Box 2019, Trenton 25, New Jersey. (1955)

*Holden, John E., Assistant Architect (Research), Edmonton Public School Board, 10733 101st Street, Edmonton, Alberta, Canada. (1965)

Hollingsworth, Henry T., Chairman, Department of School Administration, Seton Hall University, South Orange, New Jersey. (1963)

Holmes, George W., III, Professor of School of Education, University of Virginia, Charlottesville, Virginia. (1955)

Holstead, Richard L., Director, Building Program Studies, Board of Education, 428 South Broadway, Wichita, Kansas. (1959)

†*Hood, Merle M., Plant Superintendent, Spokane School District #81, Spokane, Washington. (1965)

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†Wohlers, Arthur E., Bureau of Educational Research and Services, 191 Arps Hall, Ohio State University, Columbus 10, Ohio. (1954)

†Womack, Darwin W., Director, School Plant Services, Atlanta Public Schools, 224 Central Avenue, S.W., Atlanta 3, Georgia. (1962)

Wooldridge, James D., Assistant Superintendent for Planning, Construction, Maintenance and Plant Operation, Fairfax City School Board, 102 Southwick Street, Fairfax, Virginia. (1948)

†Wrightson, Norman, Engineer, Protestant School Board of Montreal, 6000 Fielding Avenue, Montreal 29, Quebec, Canada. (1956)

Wusthoff, Charles F., Jr., Director, New Orleans Public Schools, Office of Construction Supervision, 703 Carondelet Street, New Orleans 12, Louisiana. (1956)

†Wyland, Vernon R., Assistant Superintendent, 290 West Michigan Avenue, Jackson, Michigan. (1963)

Young, Richmond C., Division of Educational Facilities Planning, State Department of Education, Albany, New York. (1955)

HONORARY AND LIFE MEMBERS

Bishop, Leon W., Jeffersonville Hospital, Tazewell, Virginia. (1929)

Bruce, William C., Editor, THE AMERICAN SCHOOL BOARD JOURNAL, 400 N. Broadway, Milwaukee, Wisconsin. (1922)

Bursch, Charles, 2522 E. Street, Sacramento, California. (1934)

Carney, N. L., Jr., Route 8, Clarksville, Tennessee. (1951)

Carpenter, W. W., Professor of Education, University of Missouri, Columbia, Missouri. (1930)

†Clapp, W. F., 1610 Blair, Lansing, Michigan. (1943)

Davis, Alfred L., Chief, School Plant Service, 2519 Nancy Lane, N.E., Atlanta, Georgia. (1958)

Deering, Elmer C., U. S. Office of Education, Washington 25, D.C. (1951)

DeShaw, Elton R., Commander, U. S. Naval Reserve, Retired, Box 282, Tavernier, Florida. (1939)

Dotter, A. D., 37 Wellington Road, Delmar, New York. (1950)

Durham, W. W., School Building Consultant, 2220 East Harrison Street, Tacoma 4, Washington. (1943)

Essex, Don L., Director, Division of School Buildings, State Department of Education, Albany, New York. (1936)

Gay, Howard, 411 Beechwood Place, Westfield, New Jersey. (1938)

Grimes, Archie B., Consultant, Plant Facilities, Department of Public Instruction, 6113 College, Des Moines, Iowa. (1951)
Hamon, Ray L., Educational Facilities Consultant, 4641 N.E., 3rd Avenue, Fort Lauderdale, Florida. (1930)
Hanson, Alvin, 10628 Connecticut Avenue, Sun City, Arizona. (1956)
Irons, Gerald E., 5363 Barton Road, North Ridgeville, Ohio. (1935)
Jelinek, B. J., 2277 North Lake Drive, Milwaukee 2, Wisconsin. (1933)
Keith, Paul J., North Kansas City Public Schools, 3905 E. 50th Terrace, N. Kansas City 19, Missouri. (1951)
Lehr, William E., Three East 25th Street, Baltimore 18, Maryland. (1947)
Lewis, John W., Assistant Superintendent of Schools, Department of Education, Baltimore, Maryland. (1933)
Mahar, James J., 129 Gallivan Boulevard, Dorchester 24, Massachusetts. (1930)
Miller, Graham, Denver Public Schools, 1985 Grape Street, Denver 20, Colorado. Re-instated. (1962)
Murphy, Forrest, Dean, School of Education, University of Mississippi, University, Mississippi. (1946)
Prentice, W. M., Superintendent of Plant, 41 Chaplin Crescent, Toronto 7, Ontario, Canada. (1958)
Rivers, Paul L., 509 Stewart Road, Modesto, California. (1948)
Taylor James L., 4005 Braddock Road, Alexandria, Virginia. (1940)
Theisen, W. W., Consultant on School Planning, 2750 North Hartung, Milwaukee, Wisconsin. (1933)
Troxel, O. L., Professor of Education, Colorado State College, Greenley, Colorado. (1948)
Turnbull, J. L., Assistant Superintendent of Public Instruction, Oregon State Department of Education, Salem, Oregon. (1947)
Viles, N.E., 2423 Virginia Avenue, Joplin, Missouri. (1931)
Wiley, Guy E., 1009 Elmwood Avenue, Oshkosh, Wisconsin. (1931)
Williams, Seymour, Consultant on Schoolhousing, Rahway, New Jersey. (1941)
Young, Gordie, 724 Shelby Street, Frankfort, Kentucky. (1945)

APPENDIX E: RESEARCH BIBLIOGRAPHY

RESEARCH RELATED TO SCHOOLHOUSE CONSTRUCTION, SITES, AND EQUIPMENT—SUBSEQUENT TO 1960

SUPPLEMENT I

Prepared for the Research Committee by Thomas E. Jordan under the direction of Wallace Strevell, Chairman.

1. American Institute of Architects Committee on Research for Architecture, Herbert H. Swinburne, Chairman (1735 New York Avenue, N. W., Washington, D.C.). "AIA Research Survey." Publication of American Institute of Architects, April, 1965.

The survey report was limited to research projects involving architects, architectual agencies, or schools of architecture. Fifty-four agencies were listed with information given regarding staffs, current and future projects as well as projects completed since 1955. Although the survey was not primarily concerned with educational facilities, a number of projects relevant to this area were included.

2. Campbell, Edward A. (University of Pittsburgh). "Schoolhouse Design for Safe Evacuation in the Event of Fire or Like Emergencies: State Statutes and State Life Safety Codes Compared with the Building Exits Code 1961." Doctoral Dissertation. *Dissertation Abstracts,* 25:2307, No. 4, 1964.

   An analysis of the relevant statutes in the fifty states of the United States indicated that only ten states had fire safety regulations commensurate to the minimum standards of National Fire Prevention Association's Building Exits Code, 1961.

3. Chick, Charles Eugene (Florida State University). "The Influence of State Approved Surveys on School Plant Planning in Selected Florida Counties." Doctoral Dissertation. *Dissertation Abstracts,* 25:5042, No. 9, 1965.

   Survey of thirty-four counties in Florida. The report indicated that 60.1 per cent of state survey recommendations for the period covered dealing with sites, construction, and remodeling were implemented. Only eleven per cent of all projects carried out in the counties included in the study were not recommended by a survey.

4. Clawson, Kenneth Ted (Florida State University). "A Technique for Determining the Operating Capacities of Junior College Instructional Facilities." Doctoral Dissertation. *Dissertation Abstracts,* 25:7037-38, No. 12, Part I, 1965.

   The study was primarily an extension and application, at the junior college level, of the Conrad formula for determining student capacity at the secondary school level.

5. Cleveland, Wayne Lewis (University of South Dakota). "Fire Insurance Practices in South Dakota Independent School Districts: An Analysis and Possible Improvements." Doctoral Dissertation. *Dissertation Abstracts,* 25:5043, No. 9, 1965.

   From interviews it was reported that school administrators in general expressed the district's need for leadership from the state level in planning and administering the fire insurance program. The majority of them favored a state insurance plan, and the state indicated that such a plan would be a financial saving to the South Dakota school districts.

6. Collins, George J. and William L. Stormer (United States Office of Education, Washington, D. C.). "Condition of Public School Plants, 1964-65." United States Office of Education: Publication Number OE 21033, 1965.

Questionnaire survey of 18,000 school plants in the United States that were in use during the 1964-65 school year. Descriptions of existing buildings relevant to characteristics, defects, deficiencies, and site conditions were given. Pupil-room ratios and the appraisals of local school officials in regard to needed classrooms were also reported.

7. **Davidson, Eero Waldemar** (University of Pittsburgh). "A Comparison of the Costs of Financing School Building Construction in Pennsylvania by the School District Authority and the State Public School Building Authority Methods." Doctoral Dissertation. *Dissertation Abstracts,* 25:959-60, No. 2, 1964.

   The comparison of the two methods favored the state level approach. It was found that administrative costs and legal fees were less, and bond discount expenses non-existent in the state authority plan.

8. **Engelhardt, N. L., Jr.,** (Westchester County, New York). "Time Required to Plan and Construct a School Building." Article. *American School Board Journal,* 150:25,+ January, 1965.

   Survey of architect's opinions and project analysis. The results of the study were reported in seven categories. The time element analysis for each of the stages of planning and construction were given.

9. **Gallagher, Eugene Francis** (St. Louis University). "Provision for Education Practices and Facilities in an Era of Urban Renewal." Doctoral Dissertation. *Dissertation Abstracts,* 25:228-9, No. 1, 1964.

   Survey by questionnaire and interviews. Nine conclusions were given and note was made of the lack of communication and cooperative planning between city planners and school officials.

10. **Good, Warren Richard** (Temple University). "Procedures and Factors in School Site Selections in Delaware." Doctoral Dissertation. *Dissertation Abstracts,* 25:3930, No. 7, 1965.

    From interviews it was found that the most frequently mentioned factors in selection of school sites were location, size, accessibility, availability, topography, cost, and utilities. The study recommended that schools be permitted to use condemnation proceedings on up to twenty acres for elementary school sites, thirty-five acres for junior high school sites, and up to fifty acres for high school sites.

11. **Hick, Basil Leo** (Columbia University). "A Study to Determine the Spaces and Facilities Needed to House the Evening Adult Program as it Now Exists in Selected Communities in New York State." Doctoral Dissertation. *Dissertation Abstracts,* 25:234, No. 1, 1964.

    Plans analysis and interviews. The findings resulted in a guide for the New York State Education Department for use in adapting older facilities and planning for adult education programs in new school buildings.

12. **Hoerner, Henry Rhodes** (Temple University). "A Comparative Investigation of the Role Educational Planning Plays in Determining School Plant Design for Public Elementary and Secondary Schools in the State of Delaware." Doctoral Dissertation. *Dissertation Abstracts,* 25:4497-98, No. 8, 1965.

    Based on questionnaires and interviews, it was concluded that educational plans should include information about: (1) philosophy, aims, and objectives; (2) program organization to be considered; (3) functions to be performed; (4) techniques and methods to be used; (5) space relationships; (6) quantative and qualitative requirements; (7) information on the pupils that will use the plant; and (8) long range planning data.

13. **Johnson, Homer Martin** (Colorado State College). "A Feasibility Study of Private Investment in Married Student College Housing in the North Central Accreditation Association Region." Doctoral Dissertation. *Dissertation Abstracts,* 25:236, No. 1, 1965.

    Survey and comparison of institutions. Concluded that the feasibility of private investment increases among institutions of larger size.

14. **Keating, Thomas Neil** (University of Nebraska Teachers College). "The Effectiveness of Procedures Used in School Building Programs in Nebraska." Doctoral Dissertation. *Dissertation Abstracts,* 24:5132, No. 12, Part I, 1964.

    Survey by questionnaires and interviews. Guidelines for conducting school building bond issue campaigns were given.

15. **Kleinhart, Erwin John** (University of Michigan). "Student Activity Participation and High School Size." Doctoral Dissertation. *Dissertation Abstracts,* 25:3935, No. 7, 1965.

    Based on survey of high school student yearbooks (grades 10-12) and follow-up visits, it was found that the smaller the school the greater the proportionate student participation and the larger the school the less the proportionate student participation, up to the 1500 student point. At this point participation reached its lowest point and no appreciable change was noted beyond this point. High schools with less than 600 students were reported as the category with greatest student activity participation.

16. **Lacey, William Edward** (University of Southern California). "Change Order Procedures and Practices in California School Construction." Doctoral Dissertation. *Dissertation Abstracts,* 25:3358, No. 6, 1964.

    Survey. Conditions surrounding work order changes and guidelines for their use were developed. Recommendations for use of findings were given.

17. **Larson, Alden Alfred** (Columbia University). "The Development of Guidelines as to the Role of the High School Principal in Planning a Secondary School Building." Doctoral Dissertation. *Dissertation Abstracts,* 25:5062, No. 9, 1965.

Case study and conferences. The analysis and description of the case study was used as an aid in developing the guidelines for the principal's role in plant planning. Specific recommendations for the various areas were given as well as the advancement of the notion of a post construction critique.

18. LATIMER, LYLE BARRETT (University of Nebraska Teachers College). "Effective School Building Use Following Reorganization of School Districts in Six Southwest Iowa Counties." Doctoral Dissertation. *Dissertation Abstracts,* 25:5685, No. 10, 1965.

    Survey by questionnaires and interviews. Suggestions, based on findings, for the use of existing buildings and criteria for the selection of future sites were given.

19. LUTZ, FRANK W. and SUSAN B. LUTZ (New Mexico Department of Education). "Interim Report of the Abo Project, A Comparative Study of the Educational Environment and the Educational Outcomes in an Underground School, a Windowless School, and Conventional Schools." Sponsored by United States Office of Education in conjunction with the United States Department of Defense. Reported in New Mexico Department of Education publication, January, 1964.

    Conclusions regarding general and school anxiety, scholastic achievement, motivation, social structure, and pupil-teacher relations of the elementary school children involved indicated no significant differences between students in the school-shelter environment and those in the other schools studied.

    The general anxiety level and measured attitudes of teachers in the school-shelter environment were not different from teachers in the other schools.

20. MERLO, FRANK P. (Rutgers). "A Guide for Developing Comprehensive Community College Facilities." Doctoral Dissertation. *Dissertation Abstracts,* 25:3938, No. 7, 1965.

    Survey. Guidelines were suggested for location and size of site, general considerations, location of buildings, and criteria for planning of the various campus areas.

21. MONACEL, LOUIS DAVID (Wayne State University). "The Effects of Planned Educational Facilities Upon Curriculum Experiences, and Related Attitudes and Aspirations of Teachers, Pupils, and Parents in Selected Urban Elementary Schools." Doctoral Dissertation. *Dissertation Abstracts,* 25:243, No. 1, 1964.

    The findings based on interviews and questionnaires indicated little change on the part of teachers in regard to curriculum attitudes and values, faculty preferences, and teaching patterns from those which had persisted in an existing building when a new building was made available to the same teachers and students.

22. **Morrissey, Ann Elizabeth** (New York University). "A Study of Selected School Building Referenda in Nassau County, Long Island, New York: With the View of Suggesting Principles for the Promotion of Referenda." Doctoral Dissertation. *Dissertation Abstracts*, 25:1695-96, No. 3, 1964.

    Survey. The report suggested that a successful building program in one district enhances success of programs in other districts. It was also noted that because school board members are susceptible to outside pressures, they are not always qualified to make decisions about new building programs.

23. **Palmer, Albert Lee** (University of Tennessee). "A Comparison of the Costs of Heating Selected Schools with Electricity, Coal, and Natural Gas." Doctoral Dissertation. *Dissertation Abstracts*, 24:2760, No. 7, 1964.

    Comparison of cost data. Costs are reported on a square foot basis and indicated that of the three schools included in the study, the coal heated school was most economical with the natural gas and electricity heat sources ranking second and third, respectively.

24. **Peters, Robert Wayne** (State University of Iowa). "A Study of Elementary Classroom Teacher Participation in the Selection and Purchase of Instructional Supplies and Equipment." Doctoral Dissertation. *Dissertation Abstracts*, 25:5071, No. 9, 1965.

    Survey. The findings reported indicated that teacher participation in the selection of instructional supplies and equipment decreases as the size of school enrollment increases. Teachers in districts with less than 1300 enrollment reported the greatest degree of involvement in supply acquisition.

25. **Reeder, Milton E.** (University of Miami). "Water and Sewage Flow Rates in Public Schools." Sponsored by Florida State Department of Education and United States Public Health Service. Reported in Florida Public Works Publication, November, 1964.

    Field survey and analysis of sewage flow rates of 158 public schools in Florida. The results of the study indicated that present criteria governing design for the Florida public schools are overly conservative and uneconomical. The study results were reported as mean values plus two standard deviations, values that would not be exceeded 97.5 per cent of the time.

Gallons Per Capita Day	Existing Criteria	Study Results
Schools with cafeteria	12	9.5
Schools with cafeteria and showers	20	11.5

26. RHODES, CHARLES WILLIAM (Michigan State University). "Practices and Trends in Purchasing Instructional Supplies by Michigan Public School Districts." Doctoral Dissertation. *Dissertation Abstracts,* 25:6353-54, No. 11, 1965.

   Questionnaire survey. Among other findings it was reported that in a majority of the districts surveyed there were no written purchasing policies and the supplies to be used and the specifications for them were determined by the administration.

27. ROGERS, PAUL JESSE (University of Southern California). "Development and Utilization of Elementary School Sites." Doctoral Dissertation. *Dissertation Abstracts,* 25:3369-70, No. 6, 1964.

   Interview investigation. Recommendations included: (1) site acreage should be based on the type of site and use; (2) a master plan for ultimate development should be established; and (3) the individuals who are to use the school plant should help to plan it.

28. TRAPANESE, MENNA GERARD (New York University). "A Study of Facilities for the Crafts Program Conducted in Selected Elementary Schools in the State of New Jersey." Doctoral Dissertation. *Dissertation Abstracts,* 25:975, No. 2, 1964.

   Survey. This study resulted in the development of a manual for use by administrators in planning and designing crafts laboratories in new school construction.

29. TROTTER, CHARLES EARL, JR. (University of Tennessee). "A Fortran Computer Program Designed to Identify the Physical Facilities for Public Secondary School Instructional Materials Centers." Doctoral Dissertation. *Dissertation Abstracts,* 25:2888, No. 5, 1964.

   Development of standards and programming for computer. The report suggested the use of the computer program developed as a guide to planning an acceptable facility. Note was made concerning the adaptation of the quantitative standards to local conditions.

Prepared for NCSC Research Committee by
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Assistant Professor of Education
McNeese State College
Lake Charles, Louisiana

APPENDIX F: ANNUAL MEETINGS

No.	*Year*	*Place*	*President*
1	1922	Buffalo	S. A. Challman
2	1923	Cleveland	S. A. Challman
3	1925	Harrisburg	S. A. Challman
4	1926	St. Paul	S. A. Challman
5	1927	Nashville	H. C. Eicher
6	1928	Raleigh	F. H. Wood
7	1929	Rochester-Albany	S. L. Smith
8	1930	Little Rock	J. J. Blair
9	1931	Richmond	F. R. Scherer
10	1932	Hartford	R. V. Long
11	1933	Milwaukee	H. W. Schmidt
12	1934	Washington	J. F. Horn
13	1935	Washington	R. H. F. Halsey
14	1936	Austin	W. G. Eckles
15	1937	Columbus	T. C. Holy
16	1938	Frankfort	W. F. Credle
17	1939	New York	A. B. Moehlman
18	1940	Chicago	J. W. Brooker
19	1941	Virginia Beach	J. W. Lewis
20	1942	Cleveland	N. E. Viles
21	1943	Cincinnati	T. J. Higgins
	1944	War (no meeting)	S. P. Clemons
22	1945	Cincinnati	W. K. Wilson
23	1946	Jackson	H. C. Headden
24	1947	Columbus	W. F. Clapp
25	1948	San Francisco	C. Bursch
26	1949	Indianapolis	J. L. Graham
27	1950	Miami Beach	I. O. Friswold
28	1951	Minneapolis	A. M. Proctor
29	1952	Boston	R. L. Hamon
30	1953	East Lansing	Don L. Essex
31	1954	San Diego	C. D. Gibson
32	1955	New Orleans	W. R. Flesher
33	1956	Washington	W. W. Theisen
34	1957	Milwaukee	E. J. Braun
35	1958	Seattle	H. Silverthorn
36	1959	Kansas City, Missouri	G. D. Englehart
37	1960	Toronto	L. L. Waite
38	1961	Atlanta	A. C. Tjomsland
39	1962	Denver	J. L. Taylor
40	1963	Princeton	J. L. Reid
41	1964	Houston	M. A. Stoneman
42	1965	Lincoln	F. C. Darby